

RG 104, Sequence 171

8NS-104-95-171, Miscellaneous
Correspondence, working papers,
reports, studies & photographs of the
“U.S. Mint Site Selection,” 1970 - 1979.

RG 104

FY 09

UNITED STATES MINT
Denver Colorado

Architectural site plans for "New Denver Mint"
Misc. Correspondence, Working Papers, Reports,
Studies and Photographs for "US Mint Site Selection"
1970-1979

OLD FRC 104-89-0005

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Box 7

Planning Report #18

PLANNING REPORT

18

Lakewood Profile

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**city
of
lakewood
colorado**

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PARKS AND RECREATION

LAKESWOOD

PROFILE

PLANNING REPORT NO. 18

April 1973

CITY OF LAKESWOOD : DEPARTMENT OF COMMUNITY DEVELOPMENT : LONG RANGE PLANNING DIVISION

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INTRODUCTION

The following Report is a profile of the demographic and land use characteristics of the City of Lakewood. It was prepared by staff of the Long Range Planning Division of the Lakewood Department of Community Development.

The Report consists of three parts.

Part 1 contains a map of each of the thirty-five Lakewood Planning Areas with a corresponding Profile for each Planning Area of its housing, population and land use characteristics. It also includes an explanation of how to use the Profile.

Part 2 is a general demographic profile of Lakewood as a whole. It includes a present population estimate and future projections along with the discussion of other demographic trends.

Part 3 is the results of a study of the "people-holding power" of Lakewood's present physical area. It gives data on a Planning Area basis concerning how many people each can hold given present zoning restrictions.

Each Part will be updated as needed. In the case of the demographic profile, the updating is planned for December of each year, given available new data, with the publication planned for April of the following year.

Any comments and suggestions are invited. Please

address them to:

Department of Community Development
City of Lakewood
1580 Yarrow Street
Lakewood, Colorado 80215

Attn: Long Range Planning Division

PART ONE

MAPS AND PROFILES OF THE LAKEWOOD PLANNING AREAS

SECTION 1: PROFILE EXPLANATION

Before using the Profiles for the Planning Areas and all the data they contain, an understanding of the peculiarities and a knowledge of the source of each statistic will be useful. The statistics will be discussed in order from the top of the page to the bottom. But first a word is necessary concerning the use of the 1970 Census as a data source.

The Census works easily and well as a data source for this Profile as long as the Census Tracts or their Block Group Divisions follow or closely follow Planning Area boundaries. Where the boundaries do not coincide, it is impossible to obtain more than general population and housing information for the Planning Areas. Figure 1 and Figure 2 show the Planning Area and Census Tract boundaries and it can be seen that they do not coincide in the south and southwest parts of the city. The data that we lose in some Planning Areas because of this is the population distribution, owner-occupied and rental housing value distributions, the total valuation, the aggregate rental and the average cost and rent per unit.

Not all of the land in all Planning Areas is within the city limits of Lakewood. Where a Planning Area also has land in Jefferson County, it will be indicated directly below the Planning Area number with the breakdown in acreage given between Lakewood and Jefferson County.

The Population Distribution is taken from the 1970 Census. If totaled, the population should agree with the 1970 Census population for the Planning Area given at the bottom of the chart. In some cases the population distribution is blank because of no population and in some cases because of the incompatibility of Census boundaries and Planning Area boundaries.

The Distribution of Owner-Occupied Housing Values is also taken from the 1970 Census. The Census excludes a few owner-occupied units from this distribution so the total of this distribution will be less than the total number of owner-occupied units in the Planning Area, the latter shown toward the bottom of the page. In some cases this distribution is blank because of the incompatibility of Census and Planning Area boundaries and in some cases because the number of units is just too small to generate an accurate sample.

The Distribution of Zoning is taken from Community Development Department information that is accurate as of July 1972. This includes all land in the City, both developed and undeveloped, but does not include any land in Jefferson County and outside Lakewood city limits. The percent is calculated by dividing the zoned acreage in each classification by the total Lakewood acreage within that Planning Area. Thus, the percents will not add up to 100%

The Distribution of Zoning of Vacant Land is also taken from Community Development Department information. But this includes only the number of vacant acres within each particular zoning classification within Lakewood city limits.

The Distribution of Land Use is again from Community Development Department information and is accurate as of July 1972. This information is only for land within the city limits of Lakewood. The percent is calculated by dividing the acres in that land use by the total number of acres in that Planning Area that are in Lakewood.

The Distribution of Rental Housing Values is taken from the 1970 Census. It may be blank for the same two reasons as the owner-occupied distribution and it does not include all the rental units in that Planning Area.

The small table with owner-occupied, rental and vacant classes is the number of housing units and not the number of structures. It will total to the total number of units in that Planning Area, which total is shown in the table to the right. That second table is self-explanatory. The number of double housing units is blank for all Planning Areas because they could not be distinguished in the Census data from other multiple units. Thus, they are all included in the latter group. Both these tables are taken from 1970 Census data.

The Total Valuation and Total Aggregate Rental figures

are from 1970 Census data but apply only to the number of units in the Distribution of Owner-Occupied Housing Values and the Distribution of Rental Housing Values respectively. Thus, the Average Per Unit in both cases is calculated by dividing the Total Valuation and Total Aggregate Rental by the total of the corresponding distribution and not by the Planning Area totals for owner-occupied and rental units. The average per unit for rental housing is a monthly figure.

Dwelling Units and People Per Gross Acre are calculated by dividing the total units and population of that Planning Area by the number of Lakewood acres in that Planning Area.

The Total Acres figure is the total number of acres in that Planning Area regardless of which political jurisdiction it is in.

The Population is the 1970 Census population as calculated for that Planning Area. The number in parentheses is an estimate of the July 1973 population for that Planning Area. These estimates will be explained in detail in a later section of the Profile.

Planning Area 25 is an exception to much of the above. It is surrounded on three sides by Lakewood and is significantly affected by Lakewood public policies, but the entire Planning Area is within the City and County of Denver. Therefore, the only information included for this Planning Area is 1970 Census information. All of the

land use and zoning information and a 1973 population estimate are not included.

Planning Area 21 is another that is completely outside Lakewood city limits. It is an unincorporated area surrounded by Lakewood which contains much of the Lochwood subdivision of Wood Brothers Homes. The Profile describing this Planning Area is virtually blank because the Planning Area was completely unoccupied in 1970 and data is unavailable to determine how many people and housing units are there today.

Four Planning Areas are generally lacking in information as far as the Profile of each is concerned. Yet each still has significant activities within it. These four Planning Areas are 1A, 6, 13, and 14A. For each one there is a narrative explaining the primary activities of that Planning Area. These narratives follow the series of maps and Profiles of the Planning Areas.

Also following the maps and Profiles are explanations of the meanings of the Zoning Districts and definitions of the land uses as used in the Profiles of the Planning Areas. It should be noted that the Zoning Districts are only explained in terms of their general use and for detailed requirements and restrictions for the respective Districts one should look to the actual Zoning Ordinance.

SECTION 2: HOW TO USE THE PROFILES

This section will be a brief explanation of how to make use of the Profiles consisting mostly of examples from Profiles of some of the Planning Areas. There are two general methods in which the data in these Profiles can be used.

The first is to use the numbers as measures in themselves, i.e., the population of a Planning Area; how large it is; how many housing units it contains. The second method is to use the numbers in comparing the characteristics of one Planning Area with those of another or with the characteristics of the City of Lakewood as a whole, i.e., what is the percent of people over 60 years of age in one certain Planning Area compared to another; what is the number of people per gross acre in a certain Planning Area compared to Lakewood as a whole; or what is the percent of commercial land use compared to other Planning Areas.

More applications of these two methods will be seen in the examples that follow:

Population Distribution - Planning Area 1, an older part of Lakewood, has 8.1% of its population between the ages of sixty-five and seventy-four. This compares to only .9% for Planning Area 16, a newer part of Lakewood, and to 3.0% for the entire city. In contrast, Planning Area 16 has 10% of its population under five years old

while Planning Area 1 has only 6.6% in the same age group.

Distribution of Rental and Owner Occupied Housing

Values and Average Per Unit - Planning Area 1 has 33.5% of its owner-occupied homes with values under \$10,000. This compares to only 2.1% for the city as a whole. The average owner-occupied and rental housing values in Planning Area 2, \$20,981 and \$127, are virtually identical with the city-wide averages, \$22,900 and \$123 respectively.

Distribution of Zoning and of Zoning of Vacant Land -

Planning Area 17 has 112.7 of the 483 vacant acres in the City which are zoned for Planned Developments, that is almost 25% of the city total. Planning Area 4 has 50.6% of its land zoned as R-1 compared to 14.6% for Lakewood as a whole.

Distribution of Land Use - Planning Area 14 still

has 512.8 acres which are used agriculturally or are vacant. That is 91.6% of the 560 acres in that Planning Area. Planning Area 1B, along Colfax Avenue, has 11.7% of its land used for commercial purposes. This compares to only 3.7% of the land in the entire city used for that purpose.

Owner-Occupied, Rental, Vacant Table - Planning Area

1 has 61% of its housing units as rental units compared to 31% owner-occupied. At the other end of the scale is Planning Area 23B which has 98% owner-occupied. These compare to city-wide figures of 70% owner-occupied with 27% rental and 3% vacant.

Single Family, Total Units Table - This Table shows that Planning Area 22 has only 4 units in multi-family structures and has 867 single family housing units. Planning Area 3 has 81% single family units and 18% multiple, very similar to the city-wide figures of 78% and 21% respectively.

Dwelling Units and People Per Gross Acre - Planning Area 1 has 5.5 dwelling units and 13.2 people per gross acre while Planning Area 17 has .9 dwelling units and 3.3 people per gross acre. The city-wide figures are 1.5 and 5.1 respectively. By dividing the number of people per gross acre by the number of dwelling units per gross acre, we get the average number of people per household. From the figures above it would be 2.4 for Planning Area 1 and 3.4 for the City.

Population - A comparison of the 1970 Census population and the estimated 1973 population in parentheses will give the increase in people for that Planning Area. Thus in Planning Area 1 there was an increase of 131 people while Planning Area 16 had an increase of 2,550 people.

A third method in which some of the data can be used is by a comparison of what different numbers within the same Profile may tell you.

For example, in Planning Area 11 there are 1,637 single family units but only 1,362 owner-occupied units. This tells you that there are about 250 single family

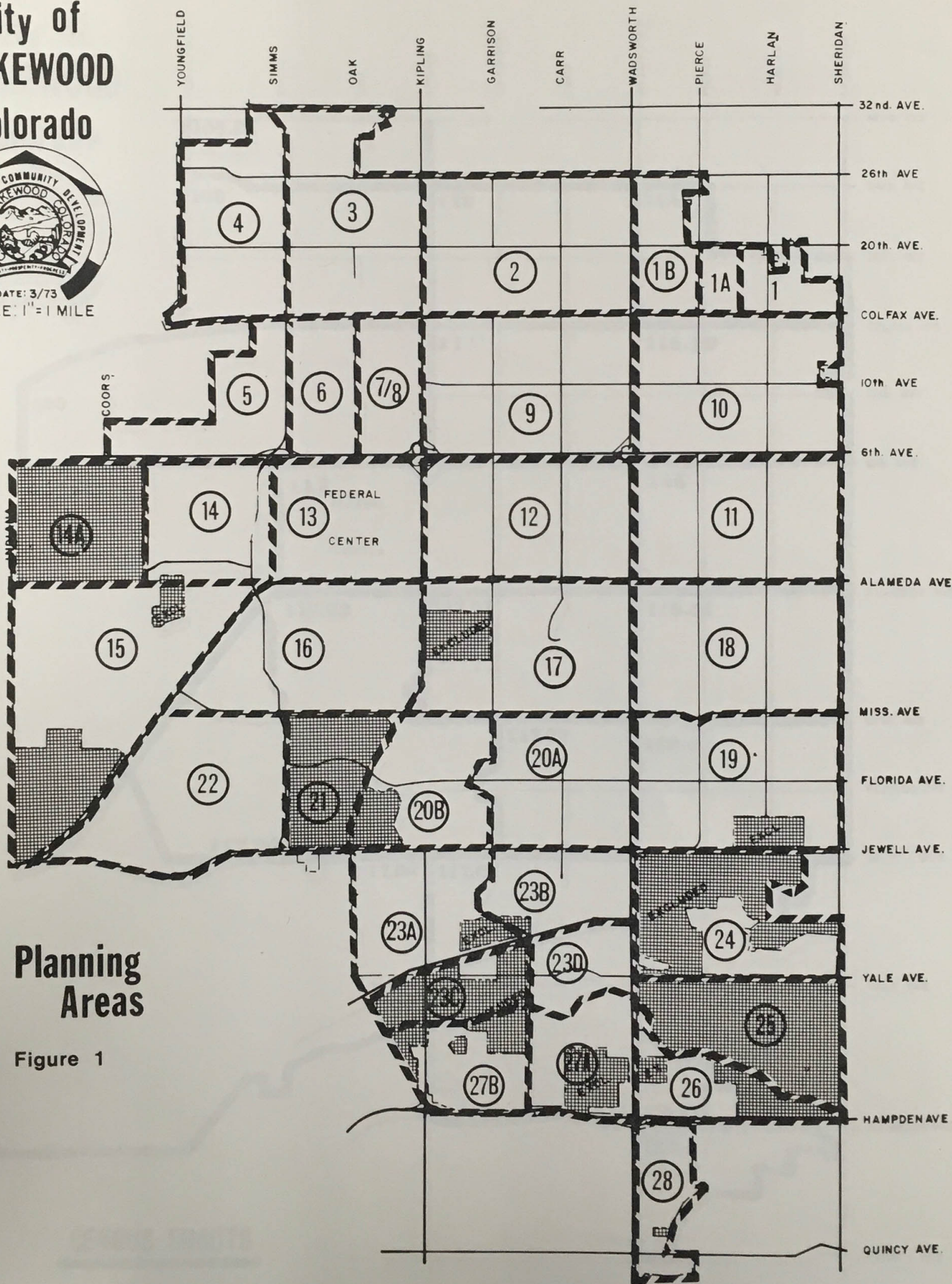
homes which are rented. Similarly in Planning Area 18 there are 987 owner-occupied units but only 938 single family units, which implies there are probably quite a few duplexes and condominiums in that Planning Area.

A comparison of the population of a Planning Area and the amount of agricultural and vacant land in the Distribution of Land Use will be a valuable measure in gauging how much more growth is likely to take place in a Planning Area.

SECTION 3: MAPS & PROFILES OF THE PLANNING AREAS

On the following pages are maps and Profiles for each of Lakewood's Planning Areas and a map and Profile for the entire City of Lakewood.

City of LAKEWOOD Colorado



City of LAKEWOOD Colorado

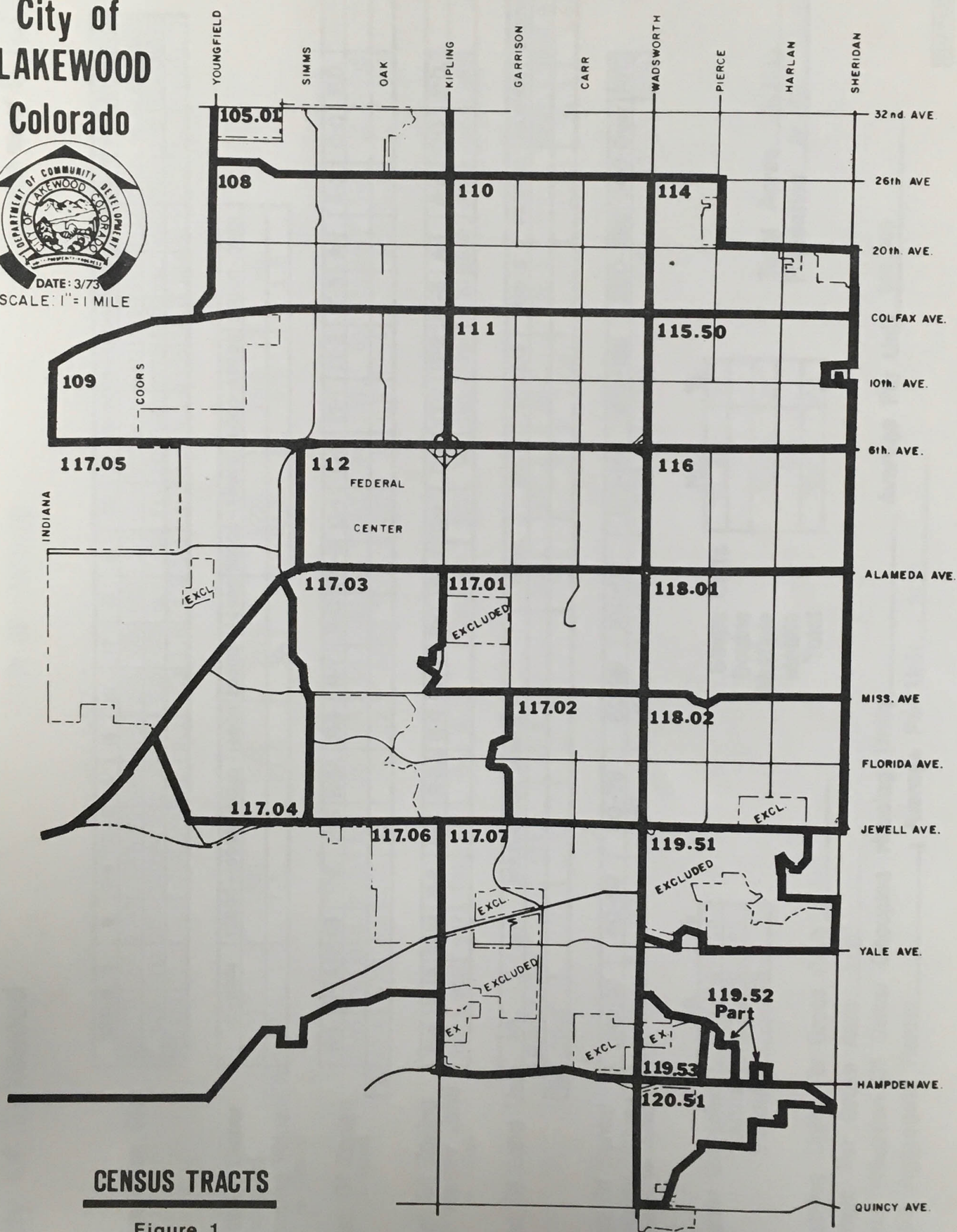


Figure 1

City Of Lakewood

CITY OF LAKEWOOD

valid as of

6 1 72

Population Dist.

	UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-01
M	4281	994	1049	3384	4379	1058	973	970	889	690	515	436	417	1505	6909	6529	5570	1716	620	620	1273	635
F	4185	951	1064	3295	4288	1008	964	936	826	627	551	533	531	2287	7776	6487	5527	1678	599	599	1514	1149
%	9.1	2.1	2.3	7.2	9.3	2.2	2.1	2.1	1.8	1.4	1.1	1.0	1.0	4.1	15.8	14.0	12.0	3.7	1.3	1.3	3.0	1.9

Dist. Of Owner Occupied Housing Values (In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	378	1303	4268	5479	4992	1560	327
%	2.1	7.3	23.8	30.5	27.8	8.7	1.8

Dist. Of Zoning (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	2630	1796	1480	2165	858	145	28	40	483	95	941	71	208	65	483	2017	749	12	596
%	14.6	9.9	8.2	12.0	4.7	.8	.2	.2	2.7	.5	5.2	.4	1.2	.4	2.7	11.2	4.1	.1	3.3

Dist. Of Zoning Of Vacant Land (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	700	422	353	390	172	44	6.3		318	60	374	40	149	25	40	1292	272	12	483

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
	6446.1		572.2	25.3	678.1	145.6	1832.3	670.0	323.3	6293.3	659.9
%	35.2		3.1	.1	3.7	.8	10.0	3.7	1.8	34.3	3.6

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	124	163	462	909	1425	2138	1562	535	13	244

Owner Occupied Rental Vacant

No.	%
19,848	70
7,582	27
728	3

No.	%
21,817	78
5,915	21
426	1
28,158	100

Total Acres 18,333

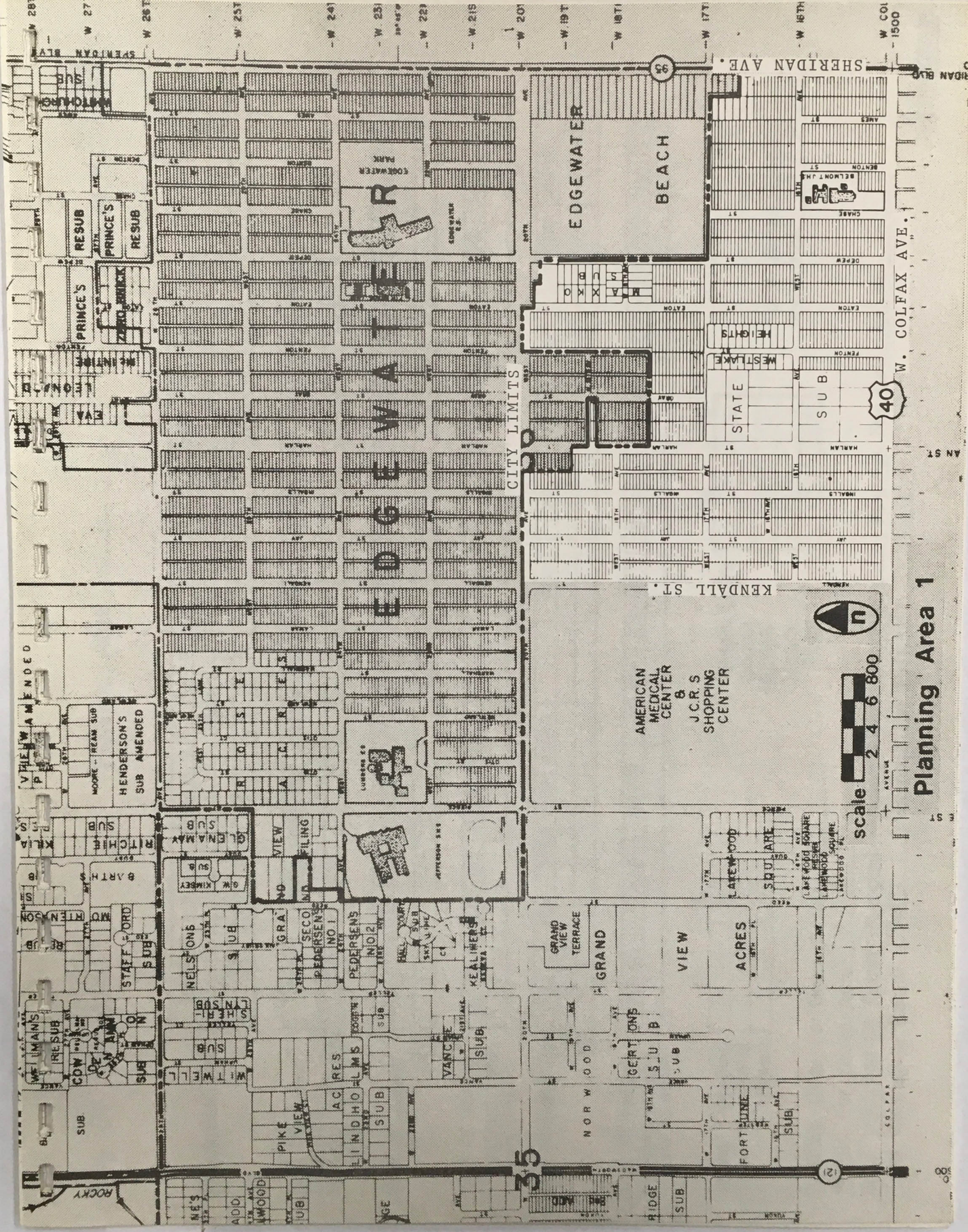
Population 92,787 (119,762)

Dwelling Units Per Gross Acre 1.5

People Per Gross Acre 5.1

Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit \$22,900

Total Aggregate Rental _____; Average Per Unit \$130



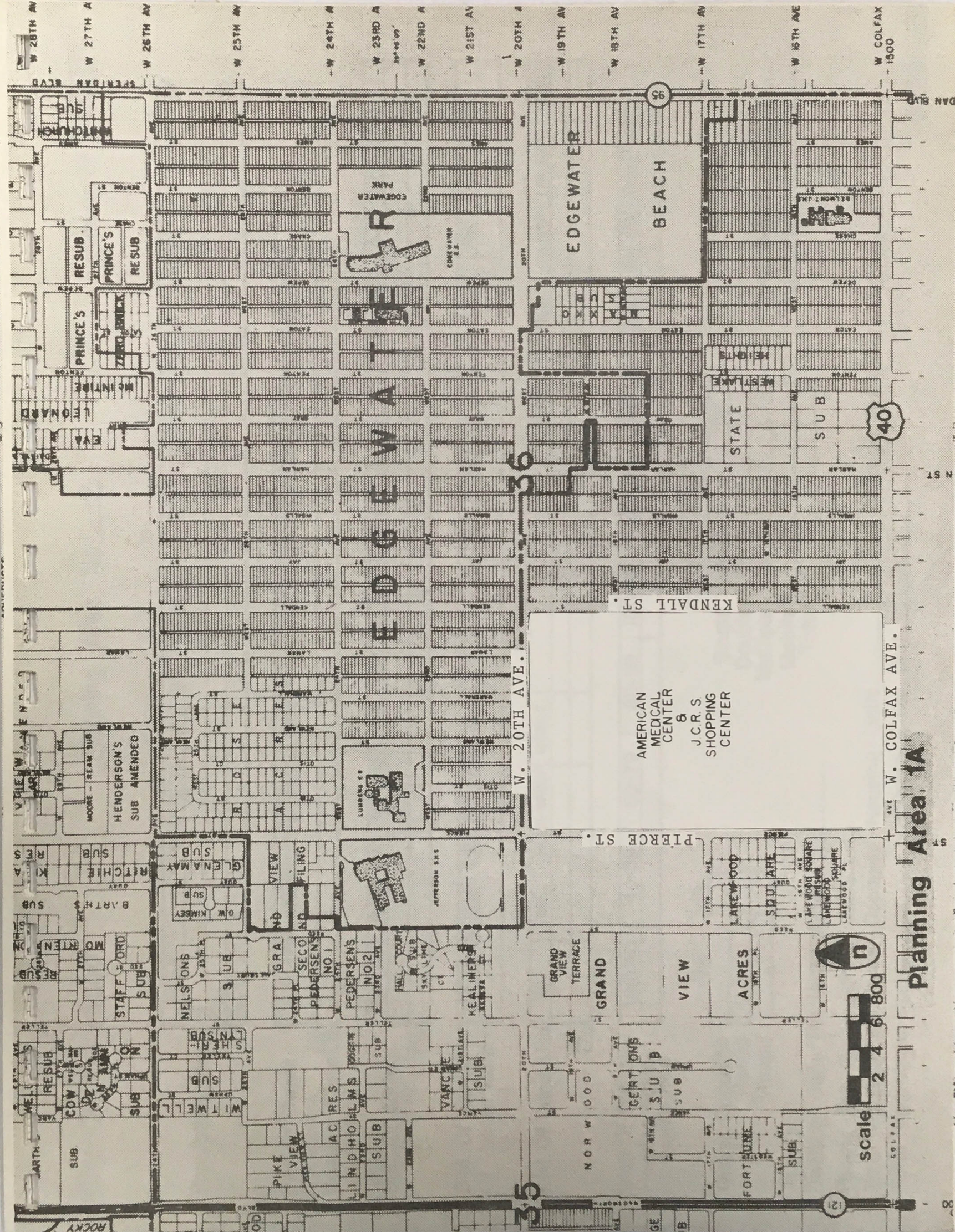
Planning Area 1

City Of Lakewood

Planning Area No. 1

valid as of 6 1 72

	UND 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-27	28-30	31-33	34-36	37-39	40-42	43-45	46-48	49-51	52-54	55-57	58-60	61-63	64-66	67-69	70-72	73-75	76-78	79-81	82-84	85-87	88-90	91-93	94-96	97-99	100-102	103-105	106-108	109-111	112-114	115-117	118-120	121-123	124-126	127-129	130-132	133-135	136-138	139-141	142-144	145-147	148-150	151-153	154-156	157-159	160-162	163-165	166-168	169-171	172-174	175-177	178-180	181-183	184-186	187-189	190-192	193-195	196-198	199-201	202-204	205-207	208-210	211-213	214-216	217-219	220-222	223-225	226-228	229-231	232-234	235-237	238-240	241-243	244-246	247-249	250-252	253-255	256-258	259-261	262-264	265-267	268-270	271-273	274-276	277-279	280-282	283-285	286-288	289-291	292-294	295-297	298-300	301-303	304-306	307-309	310-312	313-315	316-318	319-321	322-324	325-327	328-330	331-333	334-336	337-339	340-342	343-345	346-348	349-351	352-354	355-357	358-360	361-363	364-366	367-369	370-372	373-375	376-378	379-381	382-384	385-387	388-390	391-393	394-396	397-399	400-402	403-405	406-408	409-411	412-414	415-417	418-420	421-423	424-426	427-429	430-432	433-435	436-438	439-441	442-444	445-447	448-450	451-453	454-456	457-459	460-462	463-465	466-468	469-471	472-474	475-477	478-480	481-483	484-486	487-489	490-492	493-495	496-498	499-501	502-504	505-507	508-510	511-513	514-516	517-519	520-522	523-525	526-528	529-531	532-534	535-537	538-540	541-543	544-546	547-549	550-552	553-555	556-558	559-561	562-564	565-567	568-570	571-573	574-576	577-579	580-582	583-585	586-588	589-591	592-594	595-597	598-600	601-603	604-606	607-609	610-612	613-615	616-618	619-621	622-624	625-627	628-630	631-633	634-636	637-639	640-642	643-645	646-648	649-651	652-654	655-657	658-660	661-663	664-666	667-669	670-672	673-675	676-678	679-681	682-684	685-687	688-690	691-693	694-696	697-699	700-702	703-705	706-708	709-711	712-714	715-717	718-720	721-723	724-726	727-729	730-732	733-735	736-738	739-741	742-744	745-747	748-750	751-753	754-756	757-759	760-762	763-765	766-768	769-771	772-774	775-777	778-780	781-783	784-786	787-789	790-792	793-795	796-798	799-801	802-804	805-807	808-810	811-813	814-816	817-819	820-822	823-825	826-828	829-831	832-834	835-837	838-840	841-843	844-846	847-849	850-852	853-855	856-858	859-861	862-864	865-867	868-870	871-873	874-876	877-879	880-882	883-885	886-888	889-891	892-894	895-897	898-900	901-903	904-906	907-909	910-912	913-915	916-918	919-921	922-924	925-927	928-930	931-933	934-936	937-939	940-942	943-945	946-948	949-951	952-954	955-957	958-960	961-963	964-966	967-969	970-972	973-975	976-978	979-981	982-984	985-987	988-990	991-993	994-996	997-999	1000-1002	1003-1005	1006-1008	1009-1011	1012-1014	1015-1017	1018-1020	1021-1023	1024-1026	1027-1029	1030-1032	1033-1035	1036-1038	1039-1041	1042-1044	1045-1047	1048-1050	1051-1053	1054-1056	1057-1059	1060-1062	1063-1065	1066-1068	1069-1071	1072-1074	1075-1077	1078-1080	1081-1083	1084-1086	1087-1089	1090-1092	1093-1095	1096-1098	1099-1101	1102-1104	1105-1107	1108-1110	1111-1113	1114-1116	1117-1119	1120-1122	1123-1125	1126-1128	1129-1131	1132-1134	1135-1137	1138-1140	1141-1143	1144-1146	1147-1149	1150-1152	1153-1155	1156-1158	1159-1161	1162-1164	1165-1167	1168-1170	1171-1173	1174-1176	1177-1179	1180-1182	1183-1185	1186-1188	1189-1191	1192-1194	1195-1197	1198-1199	1200-1202	1203-1205	1206-1208	1209-1211	1212-1214	1215-1217	1218-1220	1221-1223	1224-1226	1227-1229	1230-1232	1233-1235	1236-1238	1239-1241	1242-1244	1245-1247	1248-1250	1251-1253	1254-1256	1257-1259	1260-1262	1263-1265	1266-1268	1269-1271	1272-1274	1275-1277	1278-1280	1281-1283	1284-1286	1287-1289	1290-1292	1293-1295	1296-1298	1299-1301	1302-1304	1305-1307	1308-1310	1311-1313	1314-1316	1317-1319	1320-1322	1323-1325	1326-1328	1329-1331	1332-1334	1335-1337	1338-1340	1341-1343	1344-1346	1347-1349	1350-1352	1353-1355	1356-1358	1359-1361	1362-1364	1365-1367	1368-1370	1371-1373	1374-1376	1377-1379	1380-1382	1383-1385	1386-1388	1389-1391	1392-1394	1395-1397	1398-1400	1401-1403	1404-1406	1407-1409	1410-1412	1413-1415	1416-1418	1419-1421	1422-1424	1425-1427	1428-1430	1431-1433	1434-1436	1437-1439	1440-1442	1443-1445	1446-1448	1449-1451	1452-1454	1455-1457	1458-1460	1461-1463	1464-1466	1467-1469	1470-1472	1473-1475	1476-1478	1479-1481	1482-1484	1485-1487	1488-1490	1491-1493	1494-1496	1497-1499	1500-1502	1503-1505	1506-1508	1509-1511	1512-1514	1515-1517	1518-1520	1521-1523	1524-1526	1527-1529	1530-1532	1533-1535	1536-1538	1539-1541	1542-1544	1545-1547	1548-1550	1551-1553	1554-1556	1557-1559	1560-1562	1563-1565	1566-1568	1569-1571	1572-1574	1575-1577	1578-1580	1581-1583	1584-1586	1587-1589	1590-1592	1593-1595	1596-1598	1599-1601	1602-1604	1605-1607	1608-1610	1611-1613	1614-1616	1617-1619	1620-1622	1623-1625	1626-1628	1629-1631	1632-1634	1635-1637	1638-1640	1641-1643	1644-1646	1647-1649	1650-1652	1653-1655	1656-1658	1659-1661	1662-1664	1665-1667	1668-1670	1671-1673	1674-1676	1677-1679	1680-1682	1683-1685	1686-1688	1689-1691	1692-1694	1695-1697	1698-1699	1700-1702	1703-1705	1706-1708	1709-1711	1712-1714	1715-1717	1718-1720	1721-1723	1724-1726	1727-1729	1730-1732	1733-1735	1736-1738	1739-1741	1742-1744	1745-1747	1748-1750	1751-1753	1754-1756	1757-1759	1760-1762	1763-1765	1766-1768	1769-1771	1772-1774	1775-1777	1778-1780	1781-1783	1784-1786	1787-1789	1790-1792	1793-1795	1796-1798	1799-1801	1802-1804	1805-1807	1808-1810	1811-1813	1814-1816	1817-1819	1820-1822	1823-1825	1826-1828	1829-1831	1832-1834	1835-1837	1838-1840	1841-1843	1844-1846	1847-1849	1850-1852	1853-1855	1856-1858	1859-1861	1862-1864	1865-1867	1868-1870	1871-1873	1874-1876	1877-1879	1880-1882	1883-1885	1886-1888	1889-1891	1892-1894	1895-1897	1898-1899	1900-1902	1903-1905	1906-1908	1909-1911	1912-1914	1915-1917	1918-1920	1921-1923	1924-1926	1927-1929	1930-1932	1933-1935	1936-1938	1939-1941	1942-1944	1945-1947	1948-1950	1951-1953	1954-1956	1957-1959	1960-1962	1963-1965	1966-1968	1969-1971	1972-1974	1975-1977	1978-1980	1981-1983	1984-1986	1987-1989	1990-1992	1993-1995	1996-1998	1999-2001	2002-2004	2005-2007	2008-2010	2011-2013	2014-2016	2017-2019	2020-2022	2023-2025	2026-2028	2029-2031	2032-2034	2035-2037	2038-2040	2041-2043	2044-2046	2047-2049	2050-2052	2053-2055	2056-2058	2059-2061	2062-2064	2065-2067	2068-2070	2071-2073	2074-2076	2077-2079	2080-2082	2083-2085	2086-2088	2089-2091	2092-2094	2095-2097	2098-2099	2100-2102	2103-2105	2106-2108	2109-2111	2112-2114	2115-2117	2118-2120	2121-2123	2124-2126	2127-2129	2130-2132	2133-2135	2136-2138	2139-2141	2142-2144	2145-2147	2148-2150	2151-2153	2154-2156	2157-2159	2160-2162	2163-2165	2166-2168	2169-2171	2172-2174	2175-2177	2178-2180	2181-2183	2184-2186	2187-2189	2190-2192	2193-2195	2196-2198	2199-2201	2202-2204	2205-2207	2208-2210	2211-2213	2214-2216	2217-2219	2220-2222	2223-2225	2226-2228	2229-2231	2232-2234	2235-2237	2238-2240	2241-2243	2244-2246	2247-2249	2250-2252	2253-2255	2256-2258	2259-2261	2262-2264	2265-2267	2268-2270	2271-2273	2274-2276	2277-2279	2280-2282	2283-2285	2286-2288	2289-2291	2292-2294	2295-2297	2298-2299	2300-2302	2303-2305	2306-2308	2309-2311	2312-2314	2315-2317	2318-2320	2321-2323	2324-2326	2327-2329	2330-2332	2333-2335	2336-2338	2339-2341	2342-2344	2345-2347	2348-2350	2351-2353	2354-2356	2357-2359	2360-2362	2363-2365	2366-2368	2369-2371	2372-2374	2375-2377	2378-2380	2381-2383	2384-2386	2387-2389	2390-2392	2393-2395	2396-2398	2399-2401	2402-2404	2405-2407	2408-2410	2411-2413	2414-2416	2417-2419	2420-2422	2423-2425	2426-2428	2429-2431	2432-2434	2435-2437	2438-2440	2441-2443	2444-2446	2447-2449	2450-2452	2453-2455	2456-2458	2459-2461	2462-2464	2465-2467	2468-2470	2471-2473	2474-2476	2477-2479	2480-2482	2483-2485	2486-2488	2489-2491	2492-2494	2495-2497	2498-2499	2500-2502	2503-2505	2506-2508	2509-2511	2512-2514	2515-2517	2518-2520	2521-2523	2524-2526	2527-2529	2530-2532	2533-2535	2536-2538	2539-2541	2542-2544	2545-2547	2548-2550	2551-2553	2554-2556	2557-2559	2560-2562	2563-2565	2566-2568	2569-2571	2572-2574	2575-2577	2578-2580	2581-2583	2584-2586	2587-2589	2590-2592	2593-2595	2596-2598	2599-2601	2602-2604	2605-2607	2608-2610	2611-2613	2614-2616	2617-2619	2620-2622	2623-2625	2626-2628	2629-2631	2632-2634	2635-2637	2638-2640	2641-2643	2644-2646	2647-2649	2650-2652	2653-2655	2656-2658	2659-2661	2662-2664	2665-2667	2668-2670	2671-2673	2674-2676	2677-2679	2680-2682	2683-2685	2686-2688	2689-2691	2692-2694	2695-2697	2698-2699	2700-2702	2703-2705	2706-2708	2709-2711	2712-2714	2715-2717	2718-2720	2721-2723	2724-2726	2727-2729	2730-2732	2733-2735	2736-2738	2739-2741	2742-2744	2745-2747	2748-2750	2751-2753	2754-2756	2757-2759	2760-2762</
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Planning Area 1A

City Of Lakewood

Planting Area No. 11

Welded **Steel** **Columns**

REPORT OF

[illegible]

Plat. Of Owner
Occupied
Rising Value
(In Dollars)

[illegible]

Unit Of Zing
(In Accord)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-0	P-0
W ₁					3.3						22.3					65.1			
W ₂					4.2						24.4					71.4			

**Dist. Of Zoning
Of Vacant Land
(in Acres)**

R-1	R-1A	R-2	R-3	R-3A	R-4	R-T	R-C	R-C1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-0	E-D
			4.5						2.5					45.5			

Dist. Of Lord Uxbridge

ISSUE	DEB.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PR. & REG.	AN. & INC.	UNCEN.
1975				30.0			28.9		30.25	
1976				30.6			29.4		30.0	

**Dist. Of Rental
Rising Values
(Dollars Per Month)**

[illegible]

Owner	Occupied	Planned	Vacant
1	1	1	1
2	1	1	1
3	1	1	1
4	1	1	1
5	1	1	1
6	1	1	1
7	1	1	1
8	1	1	1
9	1	1	1
10	1	1	1
11	1	1	1
12	1	1	1
13	1	1	1
14	1	1	1
15	1	1	1
16	1	1	1
17	1	1	1
18	1	1	1
19	1	1	1
20	1	1	1
21	1	1	1
22	1	1	1
23	1	1	1
24	1	1	1
25	1	1	1
26	1	1	1
27	1	1	1
28	1	1	1
29	1	1	1
30	1	1	1
31	1	1	1
32	1	1	1
33	1	1	1
34	1	1	1
35	1	1	1
36	1	1	1
37	1	1	1
38	1	1	1
39	1	1	1
40	1	1	1
41	1	1	1
42	1	1	1
43	1	1	1
44	1	1	1
45	1	1	1
46	1	1	1
47	1	1	1
48	1	1	1
49	1	1	1
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93	1	1	1
94	1	1	1
95	1	1	1
96	1	1	1
97	1	1	1
98	1	1	1
99	1	1	1
100	1	1	1

1/2	2/2

Single	Units
Double	"
Multiple	"
Mobile	"
Total	"

No.	%

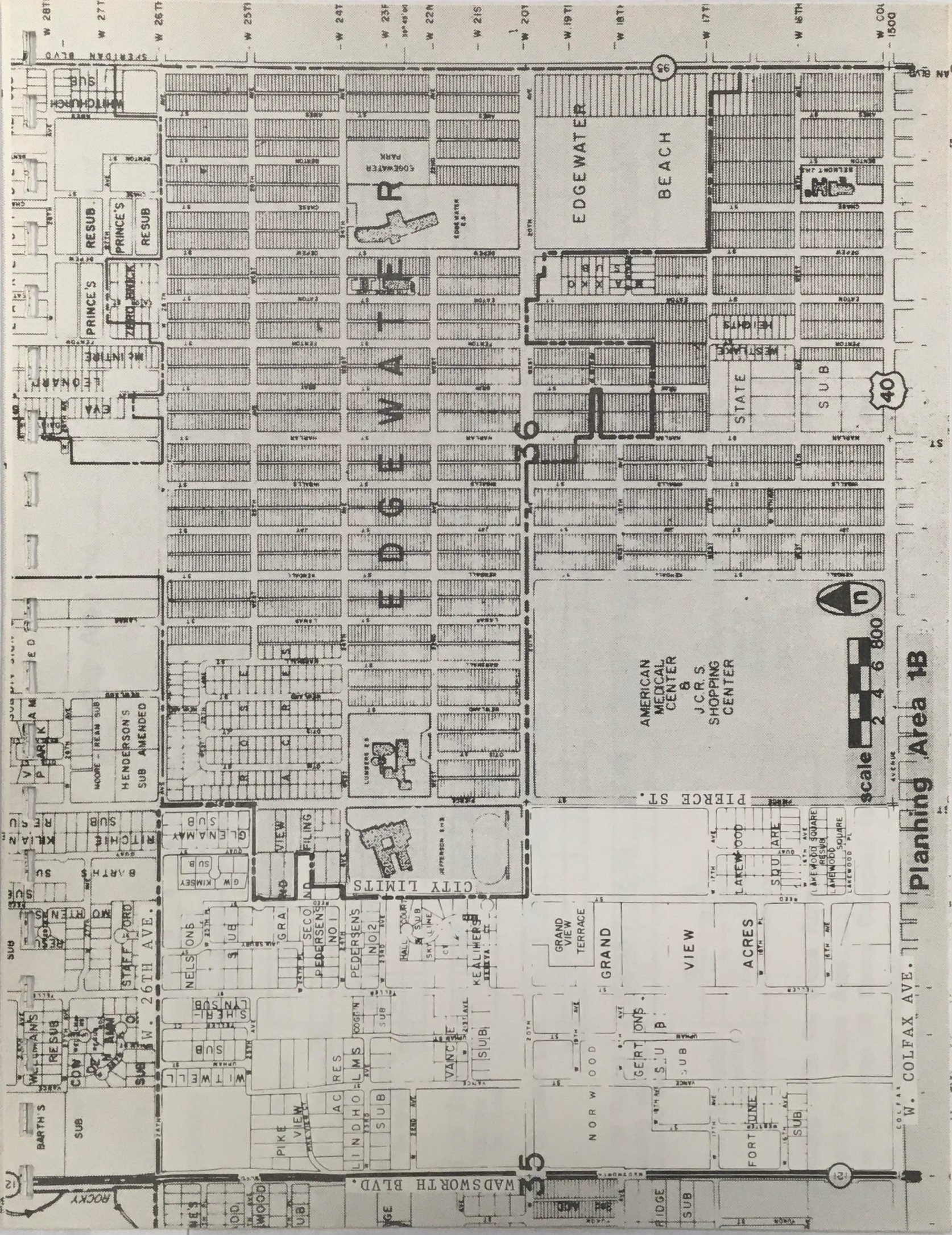
Total Acres _____ **98**
Population _____

Dwelling Units Per Gross Acre _____

People Per Gross Acre

Total Valuation Of Owner Occupied Housing Units _____: Average Per Unit

Total Aggregate Rental _____; Average Per Unit _____



Planning Area 1B

W. COLFAX AVE.

WADSWORTH BLVD.

City Of Lakewood

Planning Area No. 13

valid as of 6 1 72

Population Dist.

UNCL. 5	6	7-9	10-15	16	18	17	18	19	20	21	22-24	25-34	35-44	45-54	55-64	65-74	75-84				
M	117	12	37	62	21	13	7	14	18	17	19	25	23	202	112	43	19	16	14	23	
F	104	15	35	59	11	13	23	15	19	20	29	33	110	184	96	147	54	13	18	35	
%	10.3	1.7	3.5	5.7	1.5	1.2	1.4	1.4	1.7	1.7	2.2	2.7	9.5	16.4	8.6	12.1	4.5	1.5	1.6	3.6	2.7

Dist. Of Owner Occupied Housing Values (In Dollars)

0-1000	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
7	114	125	70	19	2	1
2.1	16.4	46.6	26.1	7.0	.7	.4

Dist. Of Zoning (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P-D
34.5			33.9	42.7				20.4	22.2	19.6	15.9							
%	11.9		13.8	14.7				7.0	7.6	6.7	5.5							

Dist. Of Zoning Of Vacant Land (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P-D
6.5			18.6	1.5				5.2	24.5	2.0	8.6							

Dist. Of Land Use

SBL	DBL	MULTI-GROUP	MOBILE	COMM	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEVELOPED
98.7		34.2		34.5	3.4	33.3	10.3	3.5	69.6	
%	33.9	29.1		11.7	1.2	11.4	3.5	1.2	23.9	

Dist. Of Rental Housing Values (Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
11	12	23	62	114	137	100	11	0	10

Owner Occupied Rental Vacant

No.	%
319	39
481	58
25	3

Single Units Double Multiple Mobile Total

No.	%
400	48
425	52
825	100

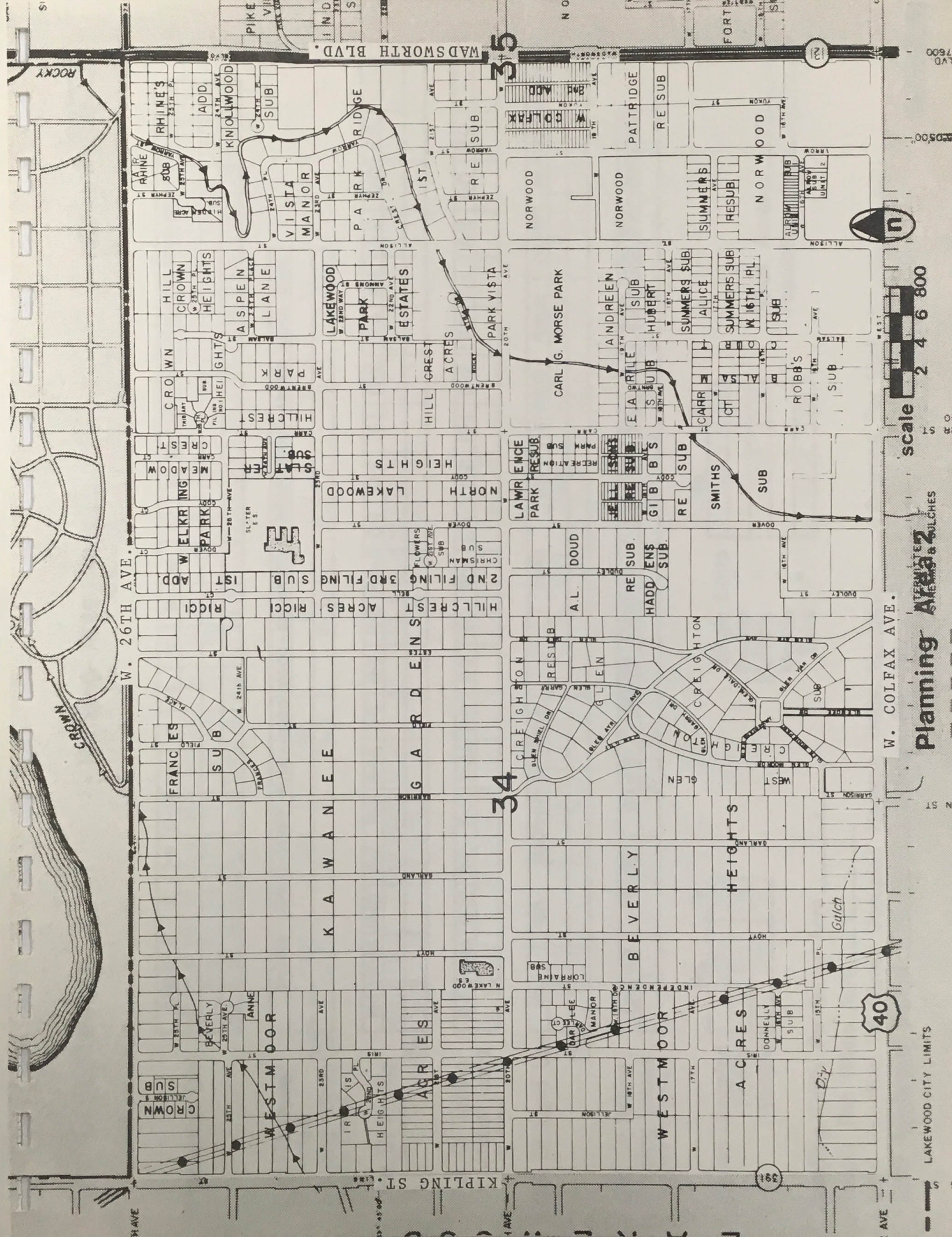
Total Acres 201
Population 2,139 (2,234)

Dwelling Units Per Gross Acre 2.8

People Per Gross Acre 7.4

Total Valuation Of Owner Occupied Housing Units \$5,117,250; Average Per Unit \$16,041

Total Aggregate Rental \$52,200; Average Per Unit \$123



scale 2 4 6 800

Planning AREA 2

W. COLFAX AVE.

40

W. 15TH AVE

W. 14TH AVE

W. 13TH AVE

W. 12TH AVE

W. 11TH AVE

W. 10TH AVE

W. 9TH AVE

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City Of Lakewood

Planning Area No. 2

valid as of 6 1 72

Population Dist.

	UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-OV
M	253	58	62	179	262	58	62	54	60	47	51	30	30	143	436	383	424	139	61	68	151	84
F	240	47	42	173	231	62	60	74	51	47	36	41	46	212	455	385	442	177	50	80	197	168
%	7.7	1.6	1.6	5.5	7.7	1.9	1.9	2.0	1.7	1.5	1.4	1.1	1.2	5.5	13.9	12.0	13.5	4.9	1.7	2.3	5.4	3.9

Dist. Of Owner Occupied Housing Values (In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	20	163	361	318	269	71	10
%	1.7	13.4	29.8	26.2	22.2	5.9	.8

Dist. Of Zoning (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	331.5	9.9	281.1	66.4	4.5				23.3	12.0	56.9	2.8							
%	34.3	1.0	29.1	6.9	.5				2.4	1.3	5.9	.3							

Dist. Of Zoning Of Vacant Land (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	34.5	.3		28.0	6.8	.9			1.8	4.5	9.0	.8							

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
	579.0		68.2		62.7	8.0	97.0	25.3	25.6	97.8	
%	60.0		7.0		6.4	.8	10.0	2.6	2.6	10.1	

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	13	15	58	119	145	255	187	46	1	

Owner Occupied Rental Vacant

No.	%
1,306	59
870	39
52	2

Single Units Double Multiple Mobile Total

No.	%
1,513	68
713	32
2	-
2,228	100

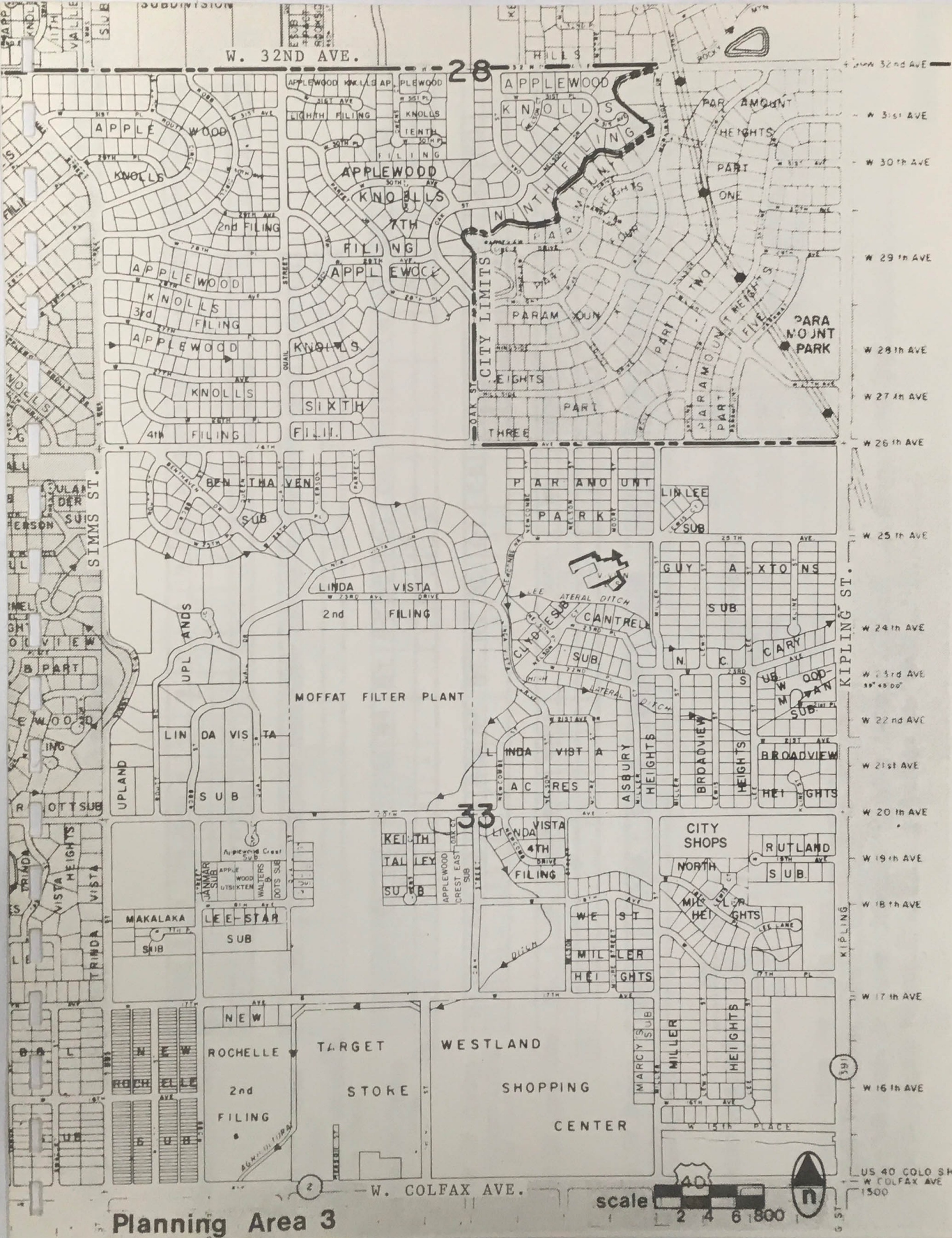
Total Acres 965
Population 6,411 (6,951)

Dwelling Units Per Gross Acre 2.3

People Per Gross Acre 6.7

Total Valuation Of Owner Occupied Housing Units \$27,402,290; Average Per Unit \$20,981

Total Aggregate Rental \$110,205; Average Per Unit \$127





Planning Area 4

scale 2 4 6 800



Population Dist.

	UND.5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-0V	
M	100	14	46	119	173	49	40	49	38	28	20	14	11	33	127	235	304	88	29	37	53	18
F	78	30	36	115	167	45	53	48	44	14	15	21	9	38	153	272	262	59	25	31	65	31
%	5.5	1.4	2.5	7.2	10.5	2.9	2.9	3.0	2.5	1.3	1.1	1.1	.6	2.2	8.6	16.1	17.4	4.5	1.7	2.1	3.6	1.5

Dist. Of Owner
OccupiedHousing Values
(In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	6	25	18	43	270	322	85
%	.8	3.3	2.3	5.6	35.1	41.9	11.1

Dist. Of Zoning

(In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	331.3	107.4		62.2	13.9				4.2		20.9								
%	50.6	16.4		9.5	2.1				.6		3.2								

Dist. Of Zoning

Of Vacant Land
(In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	99.7		14.2	22.4	1.1	1.0				.5	8.9								
%																			

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REG.	AG. & VAC.	UNDEV.
	304.9		9.7		12.9	.2	54.8	2.8	3.4	249.0	
%	47.7		1.5		2.0	-	8.5	.4	.5	39.0	

Dist. Of Rental

Housing Values
(Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	4	3	21	23	18	23	18	23	3	3

Owner Occupied

Rental

Vacant

No.	%
778	82
142	15
24	3

No.	%
853	90
90	10
1	
944	100

Single Units

Double

Multiple

Mobile

Total

Dwelling Units Per Gross Acre 1.5

People Per Gross Acre 5.1

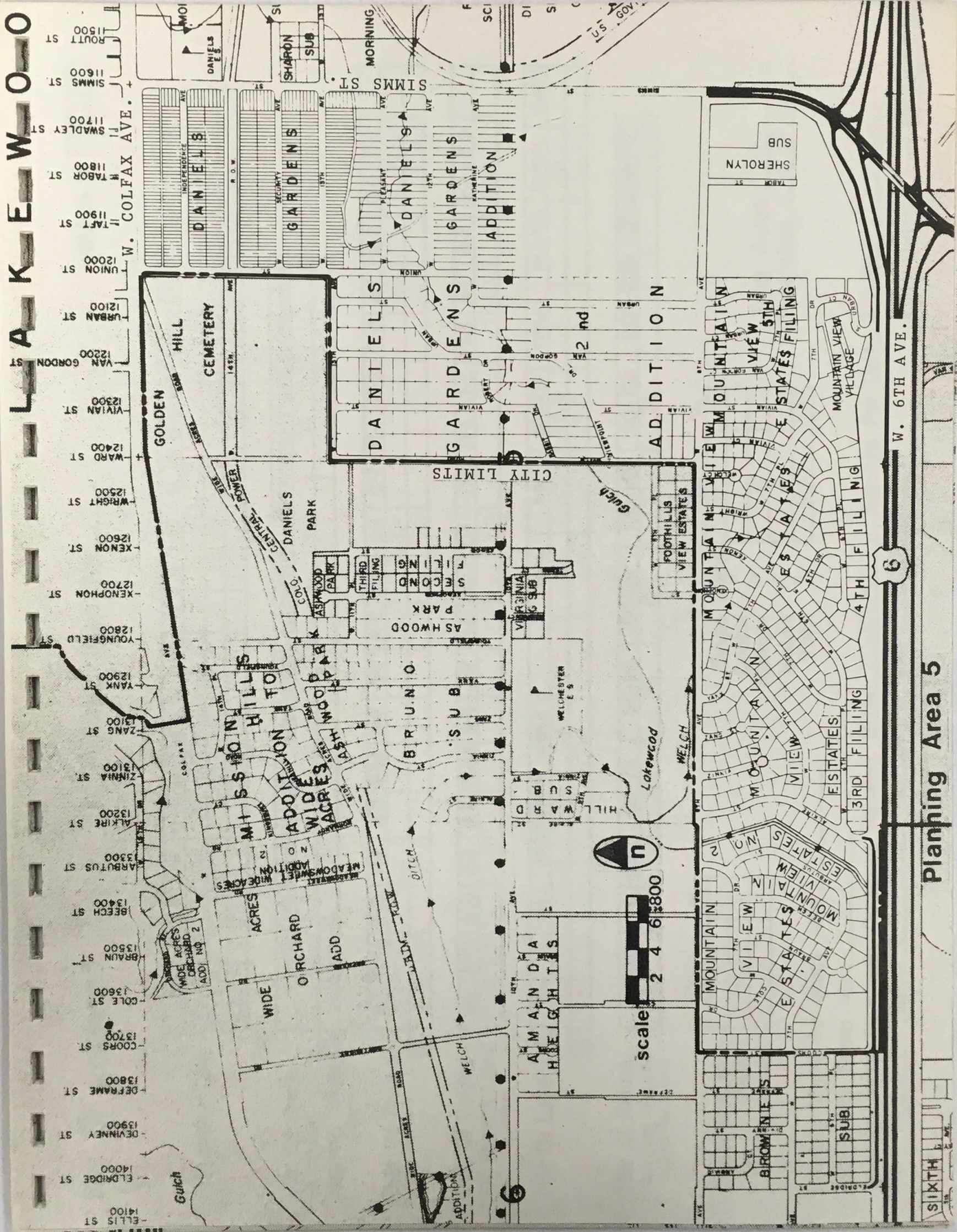
Total Valuation Of Owner Occupied Housing Units \$28,098,750

Total Aggregate Rental \$18,645

Average Per Unit \$36,024

Average Per Unit \$148

Total Acres 638
Population 3,236 (3,558)



Planning Area 5

SIXTH

W. 6TH AVE.

6

scale 2 4 6 800



CITY LIMITS

GOLDEN HILL CEMETERY

DANIELS PARK

ASHWOOD PARK

BRUNO'S SUB

WIDE ACRES

ORCHARD

ADDITION

DANIELS GARDENS

DANIELS GARDENS

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BROWNIE'S SUB

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City Of Lakewood

Planning Area No. 5

valid as of 6 1 72

	UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-0V
M	198	47	58	118	120	41	27	34	23	8	14	18	13	47	325	178	153	38	15	35	30	22
F	194	37	40	104	132	29	34	21	24	22	22	22	17	79	321	150	154	42	18	16	40	20
%	12.6	2.7	3.2	7.2	8.1	2.3	2.0	1.8	1.5	1.0	1.2	1.3	1.0	4.1	20.8	10.6	10.2	2.6	1.1	1.6	2.3	1.4

Population Dist.

Dist. Of Owner Occupied Housing Values	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	92	118	130	239	90	14	2
(In Dollars)	13.4	17.2	19.0	34.9	13.4	2.0	.3

Dist. Of Zoning (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	13.2	104.6		122.1							10.4					54.7			
%	3.2	25.1		29.3							2.5					13.1			3.3

Dist. Of Zoning Of Vacant Land (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	11.5	6.6	15.1	14.8							3.5					43.0			6.0

Dist. Of Land Use	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REG.	AG. & VAC.	UNDEV.
	205.6			.8	5.4	1.5	40.9	.3		168.2	
%	49.3			.2	1.2	.4	9.8	.1		40.3	

Dist. Of Rental Housing Values (Dollars Per Month)	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	14	11	37	28	25	50	16	7	0	12

Owner Occupied Rental Vacant	No.	%
	704	77
	200	22
	16	1

Single Units	No.	%
"	827	90
Double		
Multiple	85	9
Mobile	8	1
Total	920	100

Total Acres 417
Population 3,100 (4,439)

Dwelling Units Per Gross Acre 2.3

People Per Gross Acre 7.8

Total Valuation Of Owner Occupied Housing Units \$13,250,250; Average Per Unit \$19,343

Total Aggregate Rental \$20,015; Average Per Unit \$100

A K E W O O D

W. COLFAX AVE.

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

W. COLFAX AVE.

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

Akeley

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

R-1 SCHOOL

DISTRICT SERVICE CENTER

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

SHARON SUB

MORNINGSIDE

SUBDIVISION

MORNING SIDE SUBDIVISION

AGRICULTURAL

DITCH

U.S. GOVT.

SHEROLYN SUB

QUINTAIN VIEW

STATES FILING

QUINTAIN VIEW VILLAGE

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GE

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A K E W O O D

W. COLFAX AVE.

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

Akeley

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

R-1 SCHOOL

DISTRICT SERVICE CENTER

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

SHARON SUB

MORNINGSIDE

SUBDIVISION

MORNING SIDE SUBDIVISION

AGRICULTURAL

DITCH

U.S. GOVT.

SHEROLYN SUB

QUINTAIN VIEW

STATES FILING

QUINTAIN VIEW VILLAGE

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FEDERAL

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182

STREETS: VAN GORDON ST. 12200, URBAN ST. 12100, UNION ST. 12000, TAFT ST. 11900, TABOR ST. 11800, SWADLEY ST. 11700, SIMMS ST. 11600, ROUTT ST. 11500, ROSEB ST. 11400, QUEEN ST. 11300, QUAIL ST. 11200, PIERSON ST. 11100, PARFET ST. 11000, OWENS ST. 10900, OAK ST. 10800, NEWCOMBE ST. 10700, NELSON ST. 10600, MOORE ST. 10500, MILLER ST. 10400, LEWIS ST. 10300.

Other labels: DANIELS ES, MORNINGSIDE, SHARON SUB, MORNING SIDE SUBDIVISION, R-1 SCHOOL, DISTRICT SERVICE CENTER, AGRICULTURAL, U.S. GOVT., DITCH, MAJESTIC, HEIGHTS, WEST DRIVE-IN THEATER, SHEROLYN SUB, QUINTAIN VIEW, STATES FILING, QUINTAIN VIEW VILLAGE, GE, ING, O., FEDERAL.

A K E W O O D

W. COLFAX AVE.

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

Akeley

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

R-1 SCHOOL

DISTRICT SERVICE CENTER

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

SHARON SUB

MORNINGSIDE

SUBDIVISION

MORNING SIDE SUBDIVISION

AGRICULTURAL

DITCH

WELCH

GE

ING

O.

FEDERAL

A K E W O O D

W. COLFAX AVE.

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

W. COLFAX AVE.

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

M A J E S T I C

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

182

FEDERAL

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W. COLFAX AVE.

HILL CEMETERY

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MORNING SIDE SUBDIVISION

R-1 SCHOOL

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OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

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HILL CEMETERY

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GOLDEN ACRES

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SUBDIVISION

MORNING SIDE SUBDIVISION

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DISTRICT SERVICE CENTER

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DITCH

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MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

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HILL CEMETERY

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SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

Planning Area 6

scale 0 2 4 6 800

W. COLFAX AVE.

W. 6TH AVE.

182

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

SHEROLYN SUB

QUINTAIN VIEW

STATES FILING

QUINTAIN VIEW VILLAGE

WELCH

FEDERAL

A K E W O O D

W. COLFAX AVE.

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

W. COLFAX AVE.

HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

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DITCH

OAK ST.

MAJESTIC

HEIGHTS

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Planning Area 6

scale 0 2 4 6 800

FEDERAL

A K E W O O D

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HILL CEMETERY

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SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

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FEDERAL

A K E W O O D

Planning Area 6

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W. 6TH AVE.

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scale 0 2 4 6 800

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scale 0 2 4 6 800

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HILL CEMETERY

DANIELS GARDENS

GOLDEN ACRES

MORNINGSIDE

SHARON SUB

SUBDIVISION

MORNING SIDE SUBDIVISION

R-1 SCHOOL

DISTRICT SERVICE CENTER

AGRICULTURAL

DITCH

OAK ST.

MAJESTIC

HEIGHTS

WEST DRIVE-IN THEATER

W. 6TH AVE.

Planning Area 6

scale 0 2 4 6 800

FEDERAL

Population Dist.

	UND-5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-04
M																					
F																					
%																					

Dist. Of Owner
Occupied
Housing Values
(In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%							

Dist. Of Zoning
(In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	3.0				.4						21.3	18.2	201.7	8.0		29.1			
%	.9				.12						6.4	5.5	61.0	2.4		8.8			

Dist. Of Zoning
Of Vacant Land
(In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	3.9				.4						4.9	14.7	148.5	9.8		15.0			

Dist. Of Land Use

	S&L	DBL	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK & REC	AG & VAC.	UNDEV
	8.6		.4		44.3	29.2	21.0	1.0	2.2	212.5	
%	2.6		.1		13.8	9.1	6.5	.3	.7	66.4	

Dist. Of Rental
Housing Values
(Dollars Per Month)

	UND-40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied
Rental
Vacant

No.	%

No.	%
Single Units	
Double	
Multiple	
Mobile	
Total	

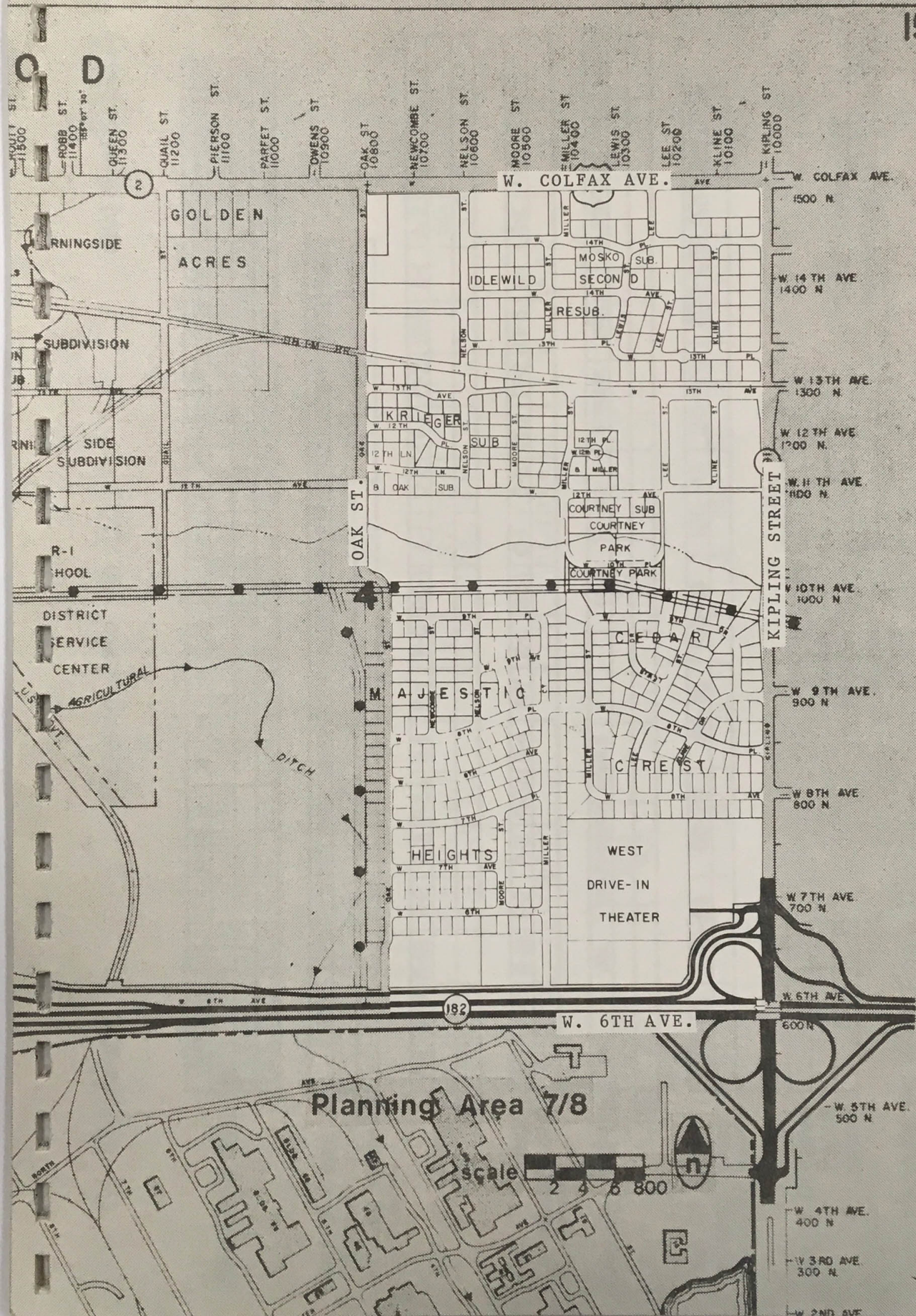
Total Acres 320
Population

Dwelling Units Per Gross Acre

People Per Gross Acre

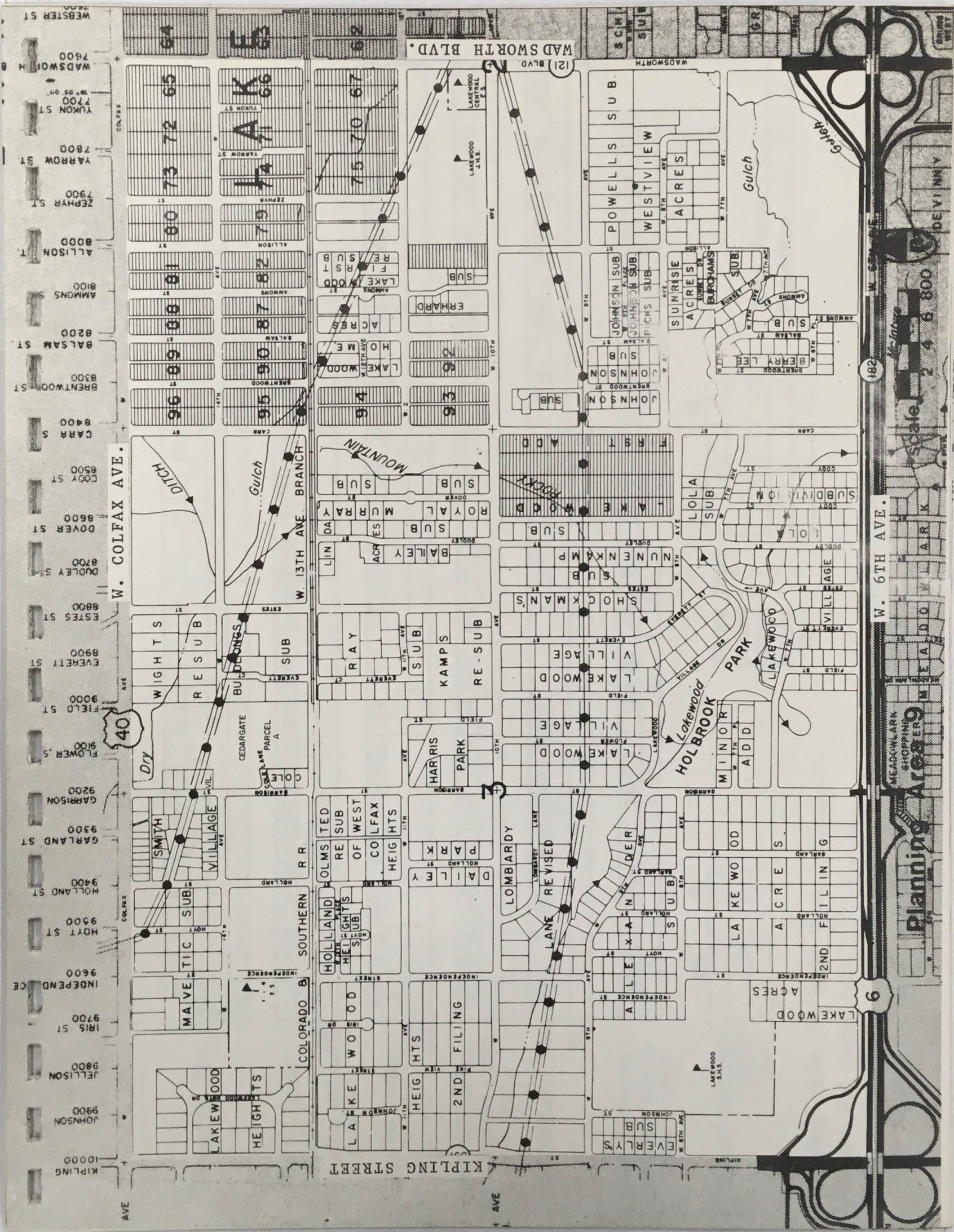
Total Valuation Of Owner Occupied Housing Units; Average Per Unit

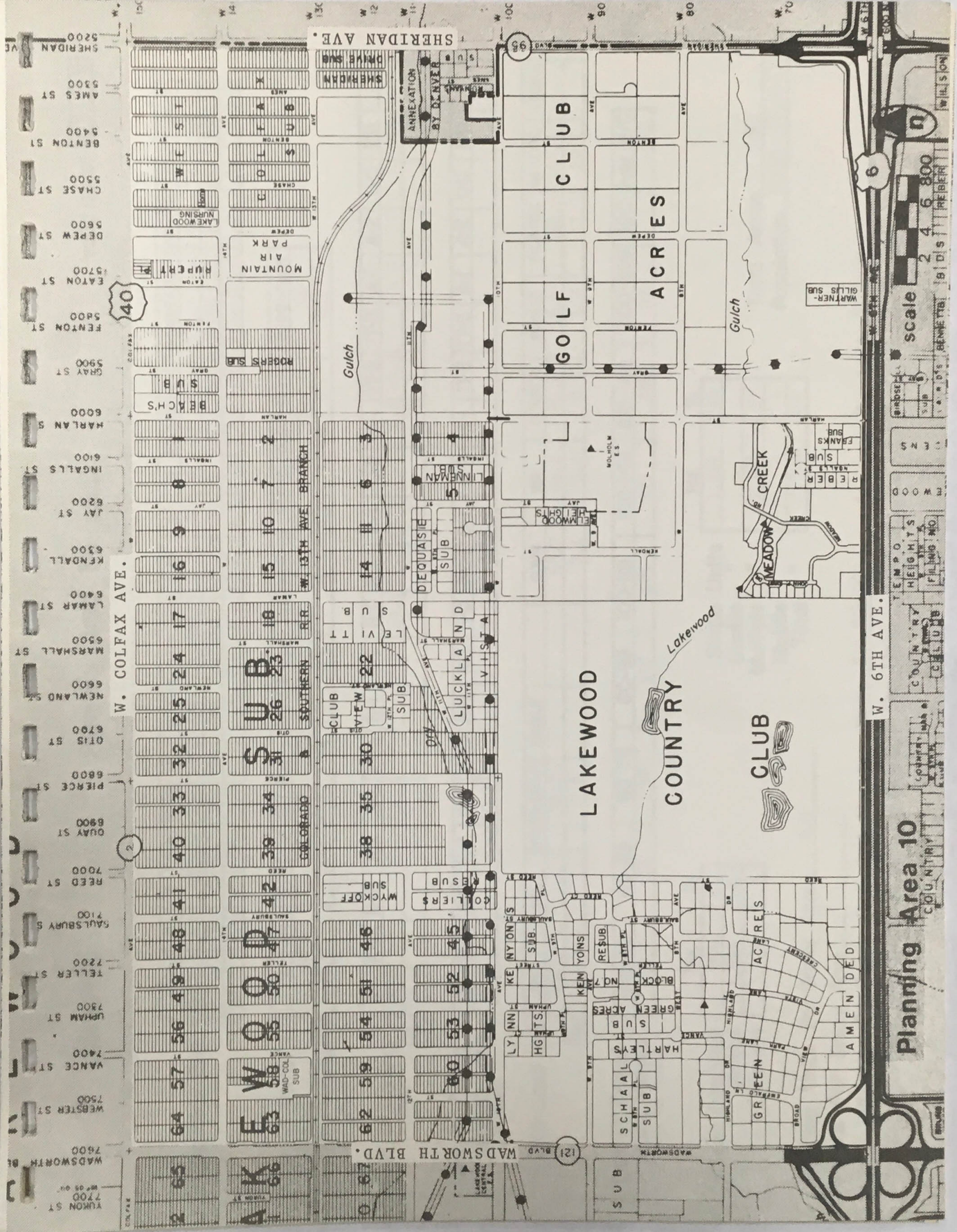
Total Aggregate Rental; Average Per Unit



Planning Area 7/8

scale 0 2 4 6 800





40

W. COLFAX AVE.

2

SHERIDAN AVE.

Gulch

14 III 6 3

15 10 7 2

16 9 8

17 8 7

18 7 6

19 6 5

20 5 4

21 4 3

22 3 2

23 2 1

24 1 0

25 0 9

26 9 8

27 8 7

28 7 6

29 6 5

30 5 4

31 4 3

32 3 2

33 2 1

34 1 0

35 0 9

36 9 8

37 8 7

38 7 6

39 6 5

40 5 4

41 4 3

42 3 2

43 2 1

44 1 0

45 0 9

46 9 8

47 8 7

48 7 6

49 6 5

50 5 4

51 4 3

52 3 2

53 2 1

54 1 0

55 0 9

56 9 8

57 8 7

58 7 6

59 6 5

60 5 4

61 4 3

62 3 2

63 2 1

64 1 0

65 0 9

66 9 8

67 8 7

68 7 6

69 6 5

70 5 4

71 4 3

72 3 2

73 2 1

74 1 0

75 0 9

76 9 8

77 8 7

78 7 6

79 6 5

80 5 4

81 4 3

82 3 2

83 2 1

84 1 0

85 0 9

86 9 8

87 8 7

88 7 6

89 6 5

90 5 4

91 4 3

92 3 2

93 2 1

94 1 0

95 0 9

96 9 8

97 8 7

98 7 6

99 6 5

100 5 4

101 4 3

102 3 2

103 2 1

104 1 0

105 0 9

106 9 8

107 8 7

108 7 6

109 6 5

110 5 4

111 4 3

112 3 2

113 2 1

114 1 0

115 0 9

116 9 8

117 8 7

118 7 6

119 6 5

120 5 4

121 4 3

122 3 2

123 2 1

124 1 0

125 0 9

126 9 8

127 8 7

128 7 6

129 6 5

130 5 4

131 4 3

132 3 2

133 2 1

134 1 0

135 0 9

136 9 8

137 8 7

138 7 6

139 6 5

140 5 4

141 4 3

142 3 2

143 2 1

144 1 0

145 0 9

146 9 8

147 8 7

148 7 6

149 6 5

150 5 4

151 4 3

152 3 2

153 2 1

154 1 0

155 0 9

156 9 8

157 8 7

158 7 6

159 6 5

160 5 4

161 4 3

162 3 2

163 2 1

164 1 0

165 0 9

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171 4 3

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222 3 2

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250 5 4

251 4 3

252 3 2

253 2 1

254 1 0

255 0 9

256 9 8

257 8 7

258 7 6

259 6 5

260 5 4

261 4 3

262 3 2

263 2 1

264 1 0

265 0 9

266 9 8

267 8 7

268 7 6

269 6 5

270 5 4

271 4 3

272 3 2

273 2 1

274 1 0

275 0 9

276 9 8

277 8 7

278 7 6

279 6 5

280 5 4

281 4 3

282 3 2

283 2 1

284 1 0

285 0 9

286 9 8

287 8 7

288 7 6

289 6 5

290 5 4

291 4 3

292 3 2

293 2 1



UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-84
M	330	68	62	223	290	91	68	81	77	69	49	36	60	162	567	443	459	148	49	61
F	356	62	75	213	321	74	62	65	66	57	64	68	66	252	575	494	486	129	47	58
%	9.4	1.8	1.9	5.9	8.3	2.2	1.8	2.0	1.9	1.7	1.5	1.4	1.7	5.6	15.6	12.8	12.9	3.8	1.3	1.6

Population Dist.

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
36	176	392	376	219	35	3
%	2.9	14.2	31.7	30.4	17.7	2.8

Dist. Of Owner Occupied Housing Values (in Dollars)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
97.8	64.4	402.4	60.8					18.6	7.1	73.4	1.5							32.3
%	10.2	6.7	41.9	6.3				1.9	.7	7.7	.2							3.4

Dist. Of Zoning (in Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
47.9	5.5	95.9	5.3					6.4	3.8	9.7								16.7

Dist. Of Zoning Of Vacant Land (in Acres)

92L	DBL	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEY
412.8		85.7		49.3	7.1	179.5	21.9	1.9	202.2	
%	43.0	8.9		5.1	.7	18.7	2.3	.2	21.0	

Dist. Of Land Use

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
13	7	26	81	159	363	193	37	0	35

Dist. Of Rental Housing Values (Dollars Per Month)

No.	%
1,362	58
917	39
62	3

Owner Occupied Rental Vacant

No.	%
1,637	70
703	30
1	
2,341	100

Single Units Double Multiple Mobile Total

Total Acres 960
Population 7,336 (8,519)

Dwelling Units Per Gross Acre 2.4
People Per Gross Acre 7.6
Total Valuation Of Owner Occupied Housing Units \$26,151,500; Average Per Unit \$21,141
Total Aggregate Rental \$119,520; Average Per Unit \$130



City Of Lakewood

Planning Area No. 12

valid as of 6 1 72

Population Dist.

	UND-5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-04	
M	210	47	69	207	302	82	68	81	72	76	31	38	25	57	277	405	495	153	52	60	78	26
F	200	62	65	231	298	79	87	79	85	60	48	27	29	69	353	466	484	123	33	52	91	48
%	6.9	1.8	2.2	7.3	10.0	2.7	2.6	2.7	2.6	2.3	1.3	1.1	.9	2.1	10.5	14.6	16.4	4.6	1.4	1.9	2.8	1.2

Dist. Of Owner Occupied Housing Values (In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	18	72	280	525	412	61	14
%	1.3	5.2	20.3	38.0	42.9	6.4	1.5

Dist. Of Zoning (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	359.0	4.6		313.1	6.5	3.3			9.8	2.1	34.9					29.0			
%	37.4	.5		32.6	.7	.3			1.0	.2	3.6					3.0			

Dist. Of Zoning Of Vacant Land (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	78.4	2.7		22.5	6.5				2.2	.7	31.3	.3							

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
	436.6		16.1		16.0		128.5	167.9	33.7	161.1	
%	45.5		1.7		1.7		13.4	17.5	3.5	16.8	

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	5	1	5	17	18	85	52	28	1	20

Owner Occupied Rental Vacant

No.	%
1,420	85
233	14
11	1

Single Units
Double
Multiple
Mobile
Total

No.	%
1,537	92
127	8
1,664	100

Dwelling Units Per Gross Acre 1.7

People Per Gross Acre 6.2

Total Valuation Of Owner Occupied Housing Units \$33,767,500; Average Per Unit \$23,780

Total Aggregate Rental \$31,575; Average Per Unit \$136

Total Acres 960
Population 5,980 (6,407)

City Of Lakewood

Planning Area No. 13

valid as of 6 1 72

Population Dist.

	UND. 5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-84
M																				
F																				
%																				

Dist. Of Owner Occupied Housing Values (In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%							

Dist. Of Zoning (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	74.4								14.2						430.9	95.6			
%	10.6								2.0						61.3	13.6			

Dist. Of Zoning Of Vacant Land (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	O-O	P.D.

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
%											

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied Rental Vacant

No.	%

No.	%
Single Units	
Double	
Multiple	
Mobile	
Total	

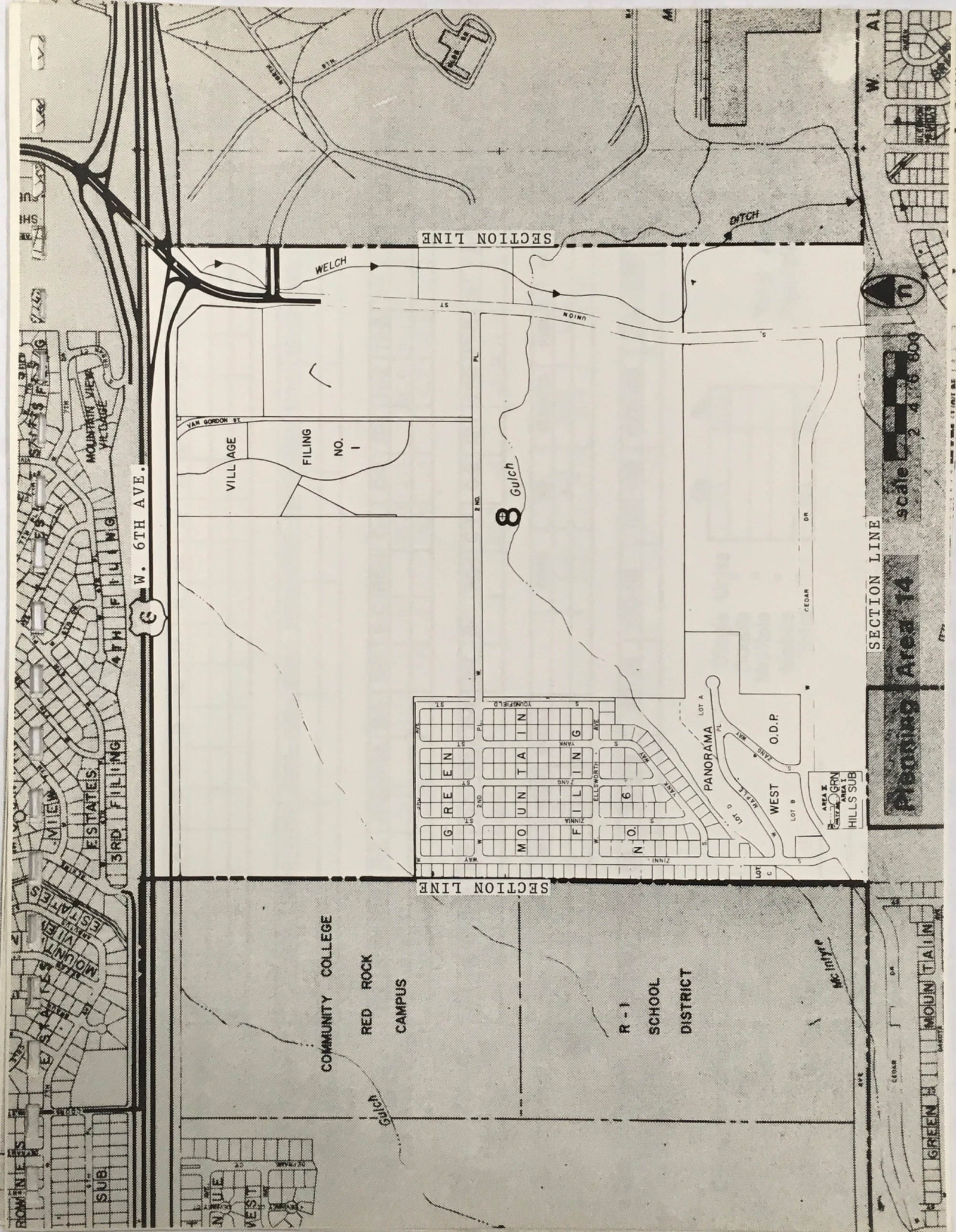
Total Acres 720
Population _____

Dwelling Units Per Gross Acre _____.

People Per Gross Acre _____.

Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit _____.

Total Aggregate Rental _____; Average Per Unit _____.



City Of Lakewood

Planning Area No. 14

valid as of 6 1 72

UND. 5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-64	65-74	75-84
M																		
F																		
%																		

Population Dist.

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%						

Dist. Of Owner Occupied Housing Values (In Dollars)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
38.8				4.0				.4		25.8	1.4		16.6	49.5				40.5
14.6				1.5				.2		9.7	.5		6.2	18.6				15.2
%																		

Dist. Of Zoning (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
38.8				3.5						25.8	.3		15.1	39.9				38.6

Dist. Of Zoning Of Vacant Land (In Acres)

SBL.	D&L	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & W.C.	UNDEVELOPED
2.7		1.4		6.2	3.9	31.4	2.0		512.8	
.5		.3		1.1	.7	5.6	.5		91.6	
%										

Dist. Of Land Use

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Dist. Of Rental Housing Values (Dollars Per Month)

No.	%
93	93
6	6
2	1

No.	%
101	100
101	100

Single Units	Double	Multiple	Mobile	Total
"	"	"	"	"

Total Acres 560
Population 295 (575)

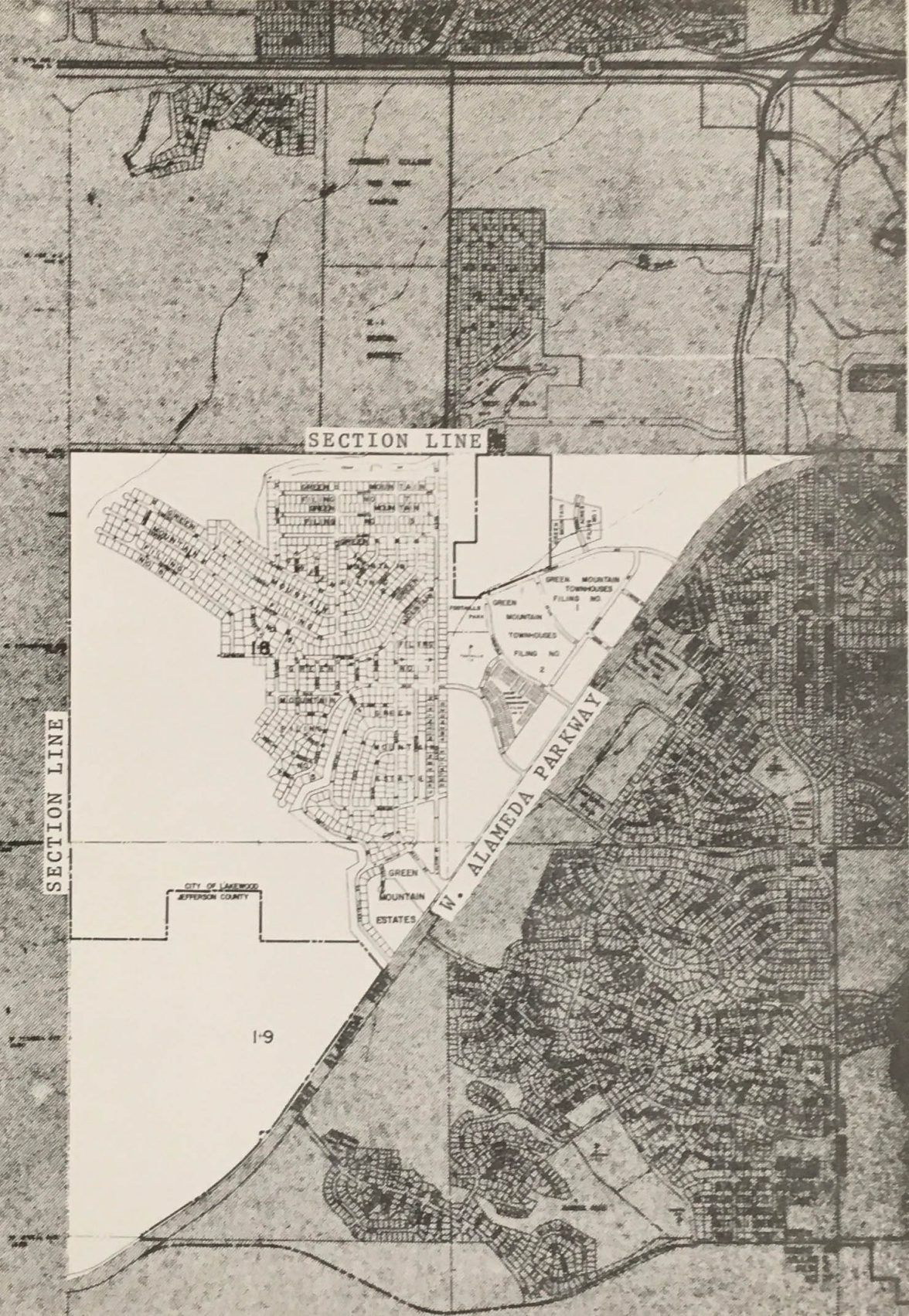
Owner Occupied Rental Vacant

Dwelling Units Per Gross Acre .2

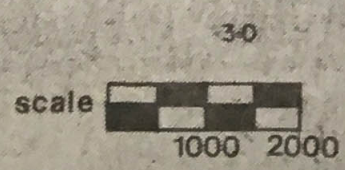
People Per Gross Acre .5

Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit _____.

Total Aggregate Rental _____; Average Per Unit _____.



Planning Area 15



City Of Lakewood

Planning Area No. 15

valid as of 6 1 72

ACRES IN LAKEWOOD 1,008 ACRES IN JEFFERSON COUNTY 367

	UND.5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-ON	
M	168	42	46	158	201	48	42	41	42	22	12	13	7	20	268	345	268	72	18	18	24	7
F	168	38	29	170	186	52	43	38	16	7	11	13	40	354	306	259	72	20	20	35	10	
%	8.9	2.1	2.0	8.7	10.3	2.6	2.3	2.1	2.0	1.0	.5	.6	.5	1.6	16.3	16.9	13.8	3.8	1.0	1.0	1.6	.5

Population Dist.

Dist. Of Owner Occupied Housing Values
(In Dollars)

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	1	4	69	341	195	23
%	.1	.6	10.9	53.9	30.8	3.6

Dist. Of Zoning
(In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
10.4	257.9		2.1	71.2	23.4	6.3		63.9		58.2						387.6		
%	1.0	24.8	.2	6.8	2.3	.6		6.1		5.6						37.3		

Dist. Of Zoning Of Vacant Land
(In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	161.1		.6	8.0		6.3		63.9		56.9						38.8	1.7	12.3

Dist. Of Land Use

SEL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & W.C.	UNDEY.
183.6		37.3		17.8		52.9	19.4		697.4	
%	18.4	3.7		1.8		5.3	1.9		69.7	

Dist. Of Rental Housing Values
(Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
					1	10	61		2

Owner Occupied Rental Vacant

No.	%
1,004	90
68	6
44	4

No.	%
1,051	94
65	6
1,116	100

Total Acres 1,375
Population 3,803 (4,574)

Dwelling Units Per Gross Acre 1.1

People Per Gross Acre 3.8

Total Valuation Of Owner Occupied Housing Units \$20,319,300; Average Per Unit \$32,100

Total Aggregate Rental \$19,314; Average Per Unit \$261



W. ALAMEDA AVE.

20

KIPLING STREET

HEIGHTS

GLEN NON

16

17

ALAMEDA PARKWAY

W. ALAMEDA PARKWAY

ALAMEDA PARKWAY

SECTION LINE ON COUNTY

Planning Area 16

1000

200

100

50

25

10

5

2

1

0

-1

-2

-3

-4

Population Dist.

	UND-5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-ON	
M	369	105	109	386	448	103	95	90	60	40	25	19	10	50	550	618	324	60	19	24	31	11
F	334	99	100	352	432	81	81	69	62	38	25	20	14	86	672	576	278	54	16	21	36	14
%	10.0	2.9	2.9	10.5	12.5	2.6	2.5	2.3	1.7	1.1	.7	.6	.3	1.9	17.5	17.1	8.6	1.6	.5	.6	.9	.4

Dist. Of Owner

Occupied

Housing Values

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	4	60	407	588	371	69	2
%	.3	4.0	27.1	39.2	24.7	4.6	.1

Dist. Of Zoning

(In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	402.9	48.2	99.7	70.8	19.2			12.1	1.6	59.4					39.1			
%	40.9	5.0	10.1	7.2	2.0			1.2	.2	6.0					4.0			

Dist. Of Zoning

(In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	94.2	1.3	3.9	31.0	6.7			12.0	1.6	48.0					32.7			

Dist. Of Land Use

SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REG.	AG. & VAC.	UNDEV.
461.2		32.9		14.2	15.7	123.8	32.1	12.3	263.1	
%	48.3	3.4		1.5	1.6	13.0	3.4	1.3	27.5	

Dist. Of Rental

(Dollars Per Month)

UND-40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
0	1	1	3	6	15	35	26	2	6

Owner Occupied

Rental

Vacant

No.	%
1,585	92
99	6
38	2

No.	%
1,672	97
50	3
1,722	100

No.	%
1,672	97
50	3
1,722	100

Total Acres 955
Population 7,006 (9,556)

Dwelling Units Per Gross Acre 1.8People Per Gross Acre 7.3Total Valuation Of Owner Occupied Housing Units \$35,587,750; Average Per Unit \$24,053Total Aggregate Rental \$16,055; Average Per Unit \$180



City Of Lakewood

Planning Area No. 17

valid as of 6 1 72

	UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-0V
M	181	38	36	130	174	42	40	33	35	20	20	11	8	28	251	287	166	51	10	10	19	6
F	134	40	44	153	180	51	42	32	25	20	19	6	8	58	299	263	169	39	12	6	23	14
%	9.7	2.4	2.5	8.8	11.0	2.9	2.5	2.0	1.9	1.2	1.2	.5	.5	2.6	17.0	17.0	10.4	2.8	.7	.5	1.3	.6

Population Dist.

Dist. Of Owner Occupied Housing Values	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	5	24	74	218	350	62	3
(In Dollars)	.7	3.3	10.0	29.6	47.6	8.4	.5

Dist. Of Zoning (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	205.7	58.7	62.2	25.3	2.2				10.2	3.9	2.7					257.3			105.4
%	24.5	7.0	7.4	3.0	.3				1.2	.5	.3					30.6			12.5

Dist. Of Zoning Of Vacant Land (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	109.1	4.3	57.4	18.3	1.8				8.2	2.1	1.1					226.6			24.9

Dist. Of Land Use	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & W.C.	UNDEV.
	260.1		14.4		2.3	.4	66.4	12.7	.1		613.5
%	26.8		1.5		.2	-	6.9	1.3	-		63.9

Dist. Of Rental Housing Values (Dollars Per Month)	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
	1	4	1	7	6	14	40	13	2	5

Owner Occupied Rental Vacant	No.	%
	754	87
	95	11
	13	2

Single Units	No.	%
Double	804	93
Multiple	58	7
Mobile		
Total	862	100

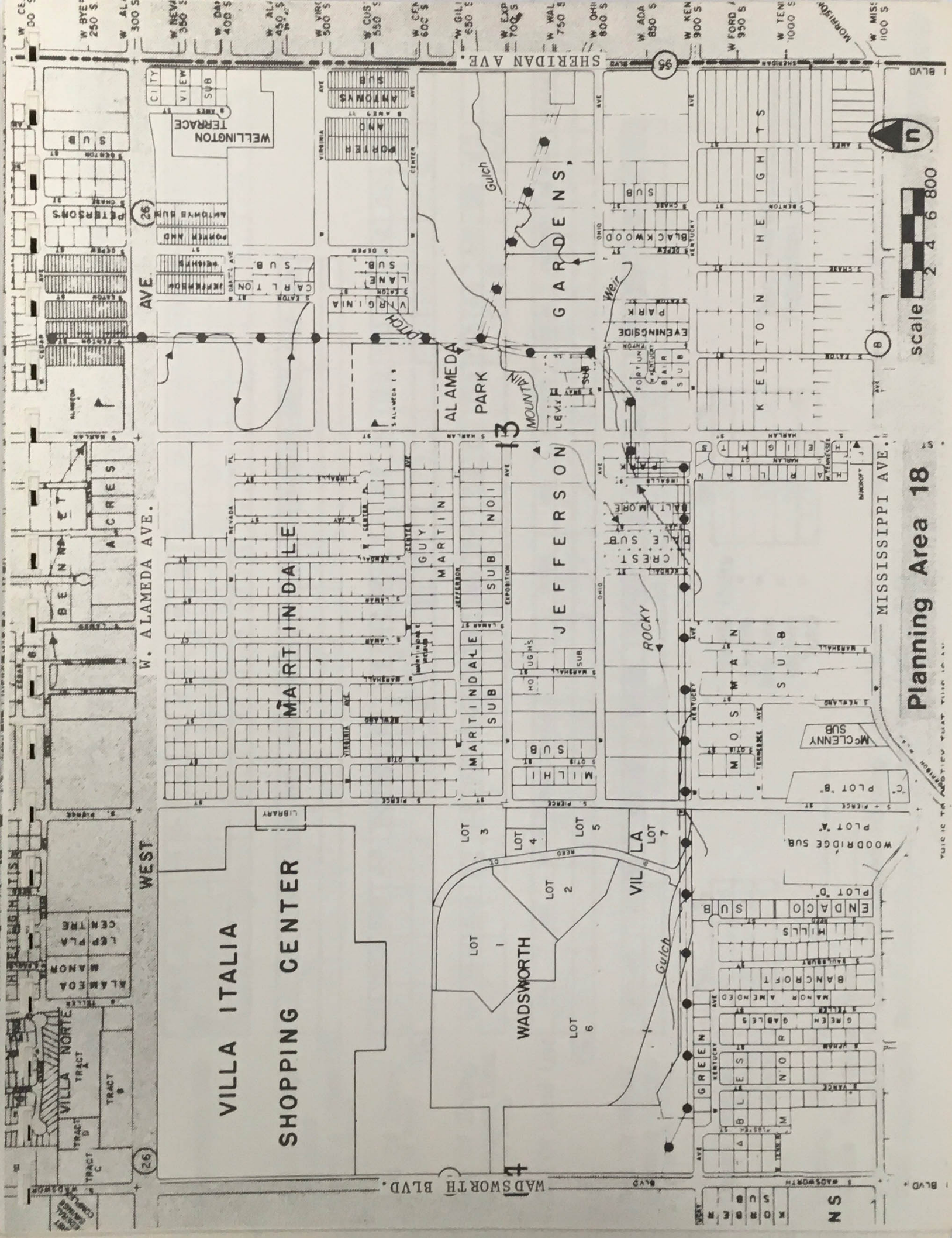
Total Acres 970
Population 3,233 (6,268)

Dwelling Units Per Gross Acre .9

People Per Gross Acre 3.3

Total Valuation Of Owner Occupied Housing Units \$19,883,500; Average Per Unit \$26,370

Total Aggregate Rental \$14,250; Average Per Unit \$150



WEST

VILLA ITALIA
SHOPPING CENTER

WADSWORTH
LOT 1
LOT 2
LOT 3
LOT 4
LOT 5
LOT 6
LOT 7

VIL
LA

ENDACO
SUB
BANCROFT
MANOR
GREEN
GABLES
NO
D
JENAM
VANCE
M
TERRY
ST
KOR
SUB
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AD
BL
ES
KENTUCKY
AVE
GREEN

W. ALAMEDA AVE.

MARTINDALE

MARTINDALE
SUB
GUY
MARTIN
ALLEGRA
SUB
NOI
EXPOSITION
JEFFERSON
MILCH
SUB
HOUGH'S
SUB
MARSHALL
SUB
KENTUCKY
AVE
OHIO
ST
BAL
MORE
CREST
SUB
KENTON
SUB
FORT
BAIR
SUB
EVENING
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PARK
BLACKWOOD
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JEFFERSON

ROCKY

MISSISSIPPI AVE.

Planning Area 18

scale 2 4 6 800



City Of Lakewood

Planning Area No. 18

valid as of 6 1 72

	UND.5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-64	65-74	75-84	
M	173	26	32	114	179	54	39	47	34	27	28	14	15	54	267	235	255	108	25	48	106	25
F	164	31	36	100	159	37	29	49	32	31	19	22	17	99	284	239	287	116	46	49	101	33
%	8.7	1.5	1.8	5.5	8.7	2.3	1.8	2.5	1.7	1.5	1.2	.9	.8	3.9	14.2	12.2	14.0	5.8	1.8	2.5	5.3	1.5

Population Dist.

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
Dist. Of Owner Occupied Housing Values	41	129	235	209	158	13	
(In Dollars)	5.2	16.4	29.9	26.6	20.1	1.6	

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
Dist. Of Zoning (In Acres)	53.0	33.2	10.3	256.2	4.0	1.6	18.5	32.8	6.3	108.9					2.8	184.0			106.4
%	5.5	3.5	1.1	26.7	.4	.2	1.9	3.4	.7	11.3					.3	19.1			11.1

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
Dist. Of Zoning Of Vacant Land (In Acres)	13.6	5.2	3.8	88.6	2.5				22.4	4.6	17.9					134.8			102.6

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. S. REG.	AG. S. VAC.	UNDEV.
Dist. Of Land Use	291.6		12.9	17.5	35.1	5.3	158.7	20.5	1.8	416.6	
%	30.4		1.3	1.8	3.6	.6	16.5	2.1	.2	43.3	

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
Dist. Of Rental Housing Values (Dollars Per Month)	4	21	24	41	33	94	42	4	0	11

	No.	%
Owner Occupied Rental	987	76
Vacant	275	21
	33	3

	No.	%
Single Units	938	72
Double		
Multiple	175	14
Mobile	182	14
Total	1,295	100

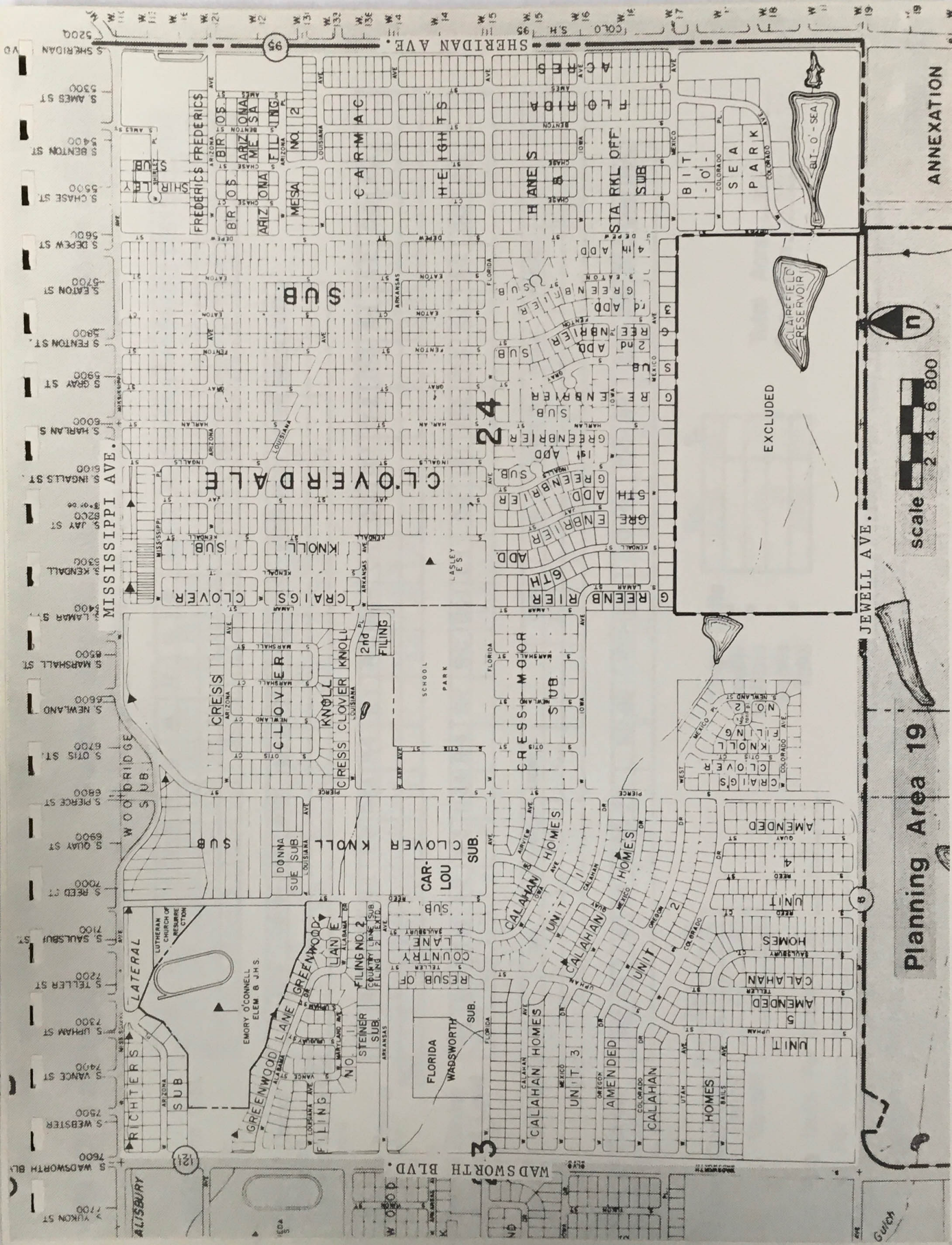
Total Acres 960
Population 3,885 (4,194)

Dwelling Units Per Gross Acre 1.3

People Per Gross Acre 4.0

Total Valuation Of Owner Occupied Housing Units \$16,113,000; Average Per Unit \$20,526

Total Aggregate Rental \$31,270; Average Per Unit \$114





STATION 4 6800

LAKEVIEW PLAZA

Area 20B

CARMO

City Of Lakewood

Planning Area No. 203

valid as of 6/1/72

ACRES IN LAKEWOOD 443 ACRES IN JEFFERSON COUNTY 132

UND. 5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-64	65-74	75-99		
M	80	17	68	71	11	16	11	6	3	4	2	11	144	118	57	8	1	2	3	
F	87	20	56	68	9	14	10	8	4	3	2	25	167	96	51	8	1	2	8	
%	12.8	2.9	2.6	9.5	10.6	1.5	2.3	1.6	.8	.6	.3	2.8	23.0	15.5	8.3	1.2	.1	.3	.8	.6

Population Dist.

Dist Of Owner Occupied Housing Values	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
	1	2	21	49	194	53	3
%	.3	.6	6.5	15.2	60.1	16.4	.9

(In Dollars)

Dist Of Zoning	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	7.3	200.3				23.1			.8							105.5	40.3		6.7
%	1.6	43.4				5.0			.2							22.9	8.7		1.5

(In Acres)

Dist Of Zoning Of Vacant Land	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	2.4	14.5				23.1			.2							78.3	45.6		

(In Acres)

Dist Of Land Use	SSL	DBL	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VMC.	UNDEVELOPED
	192.1		7.5		.7		50.5	21.6		170.8	
%	43.2		1.7		.2		11.4	4.9		38.5	

Dist Of Rental Housing Values

(Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied Rental Vacant	No.	%
Occupied	333	90
Rental	14	4
Vacant	28	6

Owner Occupied Rental Vacant

Single Units	No.	%
Double	370	99
Multiple	5	1
Mobile		
Total	375	100

Single Units Double Multiple Mobile Total

Dwelling Units Per Gross Acre .8

People Per Gross Acre 3.0

Total Valuation Of Owner Occupied Housing Units \$9,658,000; Average Per Unit \$29,900

Total Aggregate Rental ; Average Per Unit

Total Acres 575
Population 1,310 (3,100)



City Of Lakewood

Planning Area No. 21

valid as of 6 1 72

ACRES IN LAKEWOOD 0 ACRES IN JEFFERSON COUNTY 369

Population Dist.

UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-01
M																					
F																					
%																					

Dist. Of Owner Occupied Housing Values (In Dollars)

0 - 9999	10000 - 14999	15000 - 19999	20000 - 24999	25000 - 34999	35000 - 49999	50000 - OVER
%						

Dist. Of Zoning (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
%																		

Dist. Of Zoning Of Vacant Land (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.

Dist. Of Land Use

SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
%										

Dist. Of Rental Housing Values (Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied Rental Vacant

No.	%

Single Units
Double
Multiple
Mobile
Total

No.	%

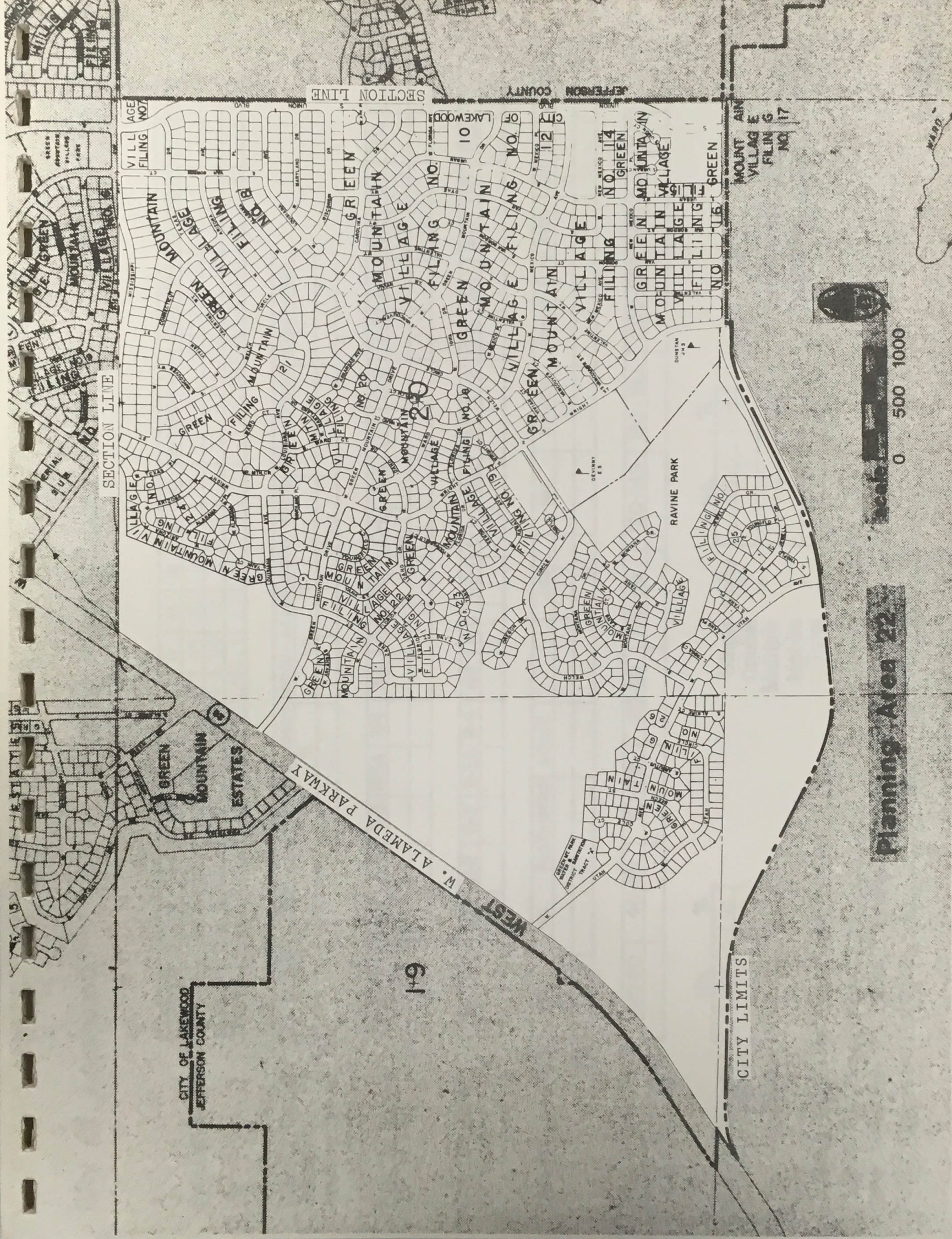
Total Acres 369
Population _____

Dwelling Units Per Gross Acre _____

People Per Gross Acre _____

Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit _____.

Total Aggregate Rental _____; Average Per Unit _____.



SECTION LINE

SECTION LINE

JEFFERSON COUNTY

CITY OF LAKEWOOD
JEFFERSON COUNTY

CITY LIMITS

W. ALAMEDA PARKWAY

RAVINE PARK

Planning Area 22



City Of Lakewood

Planning Area No. 22

valid as of 6 1 72

Population Dist.

	UND.5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-OV
M	232	62	61	215	219	33	36	28	25	26	4	5	5	14	311	358	122	21	6	5	8	7
F	209	51	57	204	256	36	45	24	15	18	5	3	3	22	403	283	113	14	9	1	12	8
%	12.3	3.2	3.3	11.7	13.3	1.9	2.3	1.5	1.1	1.2	.3	.2	.2	1.0	19.9	17.9	6.6	1.0	.4	.2	.6	.4

Dist. Of Owner Occupied Housing Values (in Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
		2	84	429	271	2	1
%		.3	10.6	54.4	34.3	.3	.1

Dist. Of Zoning (in Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	84.8	255.6	204.8						12.2		9.3					117.4	6.0		
%	9.5	28.7	23.0						1.4		1.1					13.2	.7		

Dist. Of Zoning Of Vacant Land (in Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	32.2	30.6	127.8						2.5		5.3					41.2			112.7

Dist. Of Land Use

	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & W.C.	UNDEV.
	295.6				1.4		80.3	31.1	3.5	383.7	
%	37.2				.2		10.1	3.9	.4	48.3	

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
--	--------	-------	-------	-------	---------	---------	---------	---------	----------	-----

Owner Occupied Rental Vacant

No.	%
824	95
17	2
30	3

Single Units Double Multiple Mobile Total

No.	%
867	99
4	1
871	100

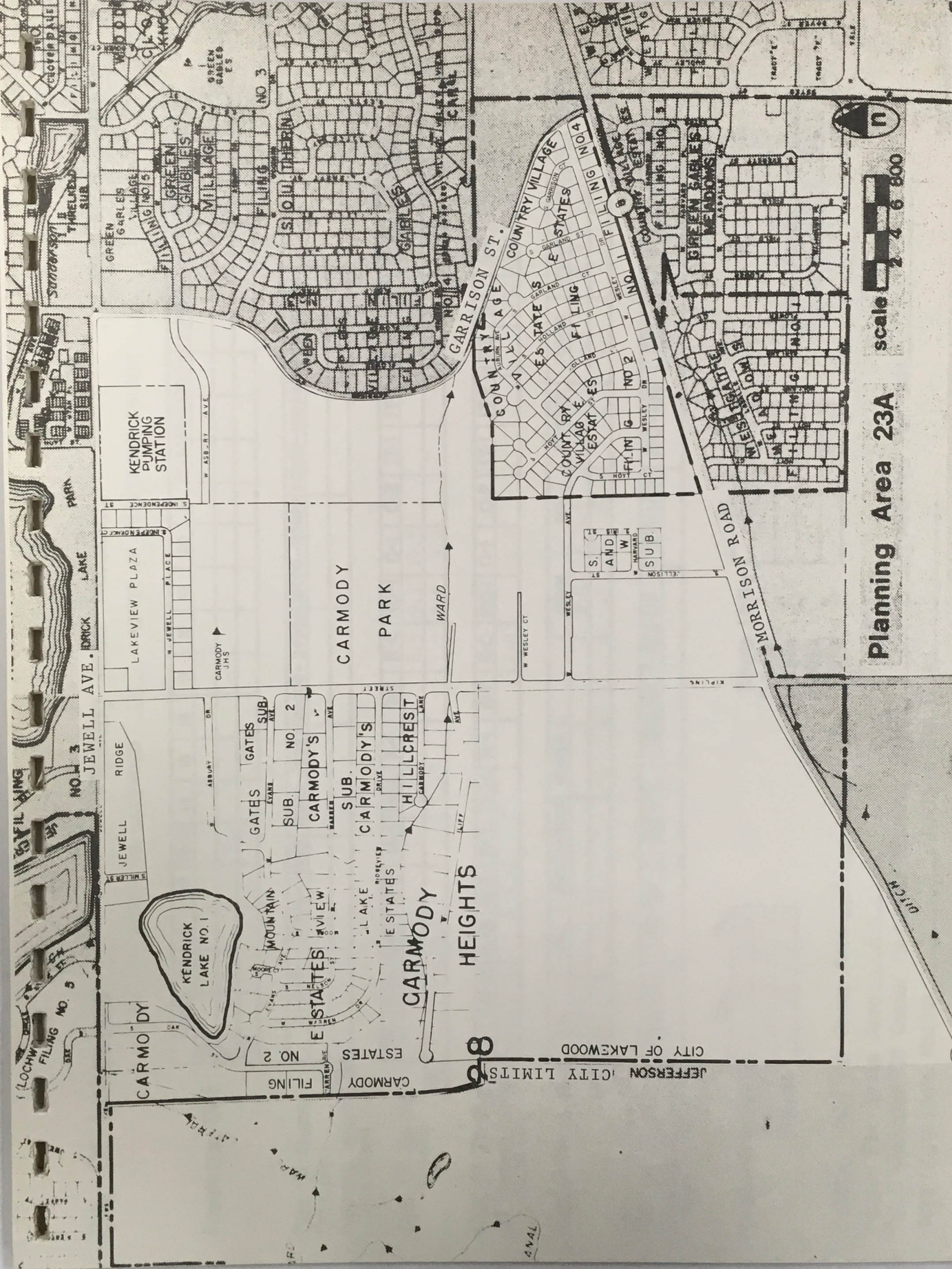
Dwelling Units Per Gross Acre 1.1

People Per Gross Acre 4.5

Total Valuation Of Owner Occupied Housing Units \$19,487,500; Average Per Unit \$24,699

Total Aggregate Rental _____; Average Per Unit _____

Total Acres 795
Population 3,545 (7,804)



Planning Area 23A





City Of Lakewood

Planning Area No. 23 B

valid as of 6 1 72

ACRES IN LAKEWOOD 364 ACRES IN JEFFERSON COUNTY 10

Population Dist.

UND 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-64	65-74	75-ON
M																			
F																			
%																			

Dist. Of Owner Occupied Housing Values (In Dollars)

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%						

Dist. Of Zoning (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
27.3	178.3			3.7				6.3	9.3	14.5					52.5			
7.5	49.1			1.0				1.7	2.6	4.0					14.5			
%																		

Dist. Of Zoning Of Vacant Land (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
11.6	38.7			.8					5.0	5.0					42.1			11.0

Dist. Of Land Use

SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & UNCL.	UNDEV.
164.4		1.2		5.9	1.9	47.3	11.4		131.5	
45.1		.3		1.6	.5	13.0	3.1		36.1	
%										

Dist. Of Rental Housing Values (Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

No.	%
606	98
7	1
10	1

Owner Occupied Rental Vacant

No.	%
614	99
9	1
623	100

Single Units Double Multiple Mobile Total

Dwelling Units Per Gross Acre 1.7

People Per Gross Acre 6.7

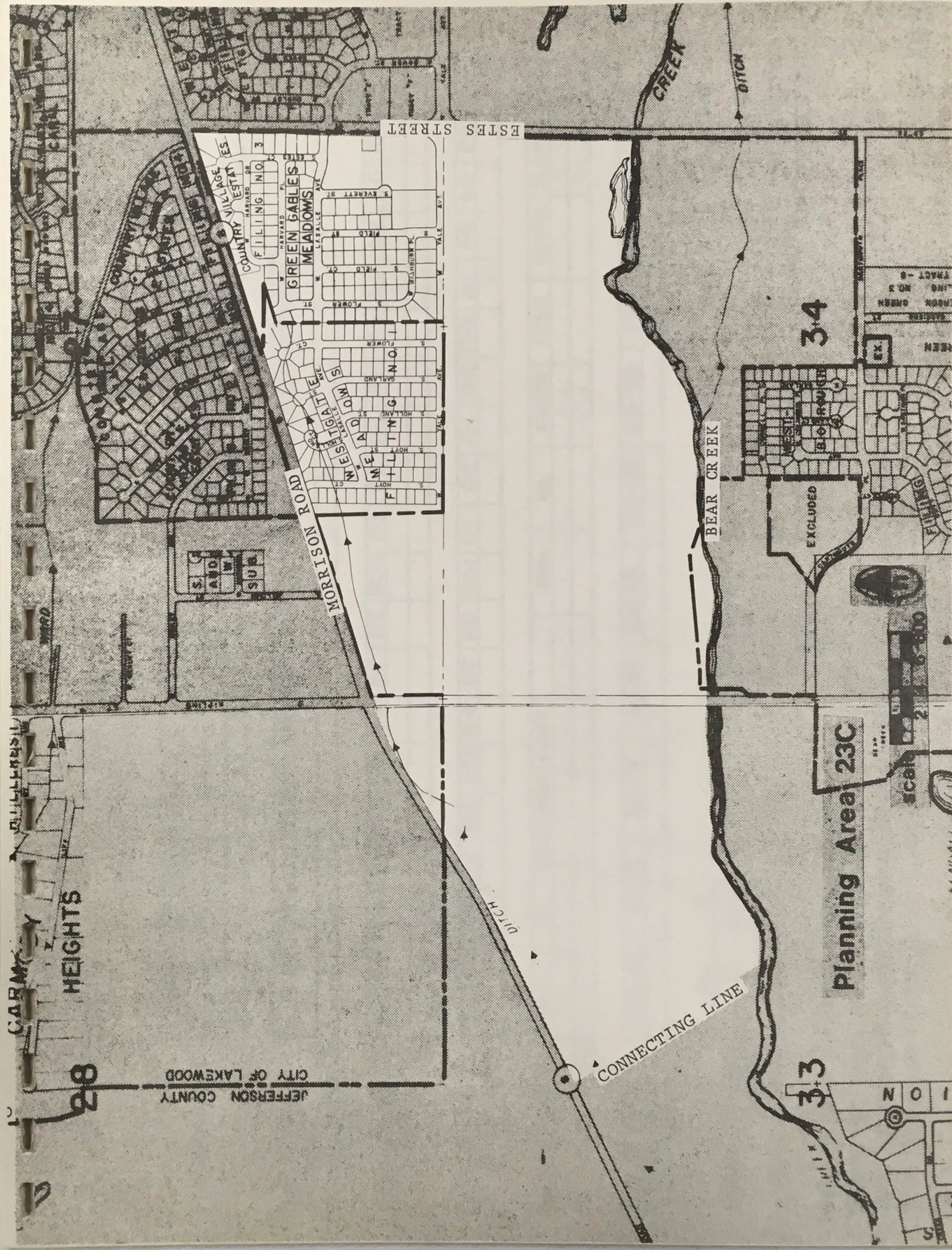
Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit _____.

Total Aggregate Rental _____; Average Per Unit _____.

Total Acres 374
Population 2,451 (2,779)

CARMICHAEL HEIGHTS

JEFFERSON COUNTY
CITY OF LAKEWOOD



Planning Area 23C

33

34

CONNECTING LINE

BEAR CREEK

ESTES STREET

MORRISON ROAD

COUNTRY VILLAGE

GREEN GABLES MEADOWS

WESTINGHOUSE

FILLING NO. 3

FILLING NO. 2

FILLING NO. 1

FILLING NO. 4

FILLING NO. 5

FILLING NO. 6

FILLING NO. 7

FILLING NO. 8

FILLING NO. 9

FILLING NO. 10

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FILLING NO. 93

FILLING NO. 94

FILLING NO. 95

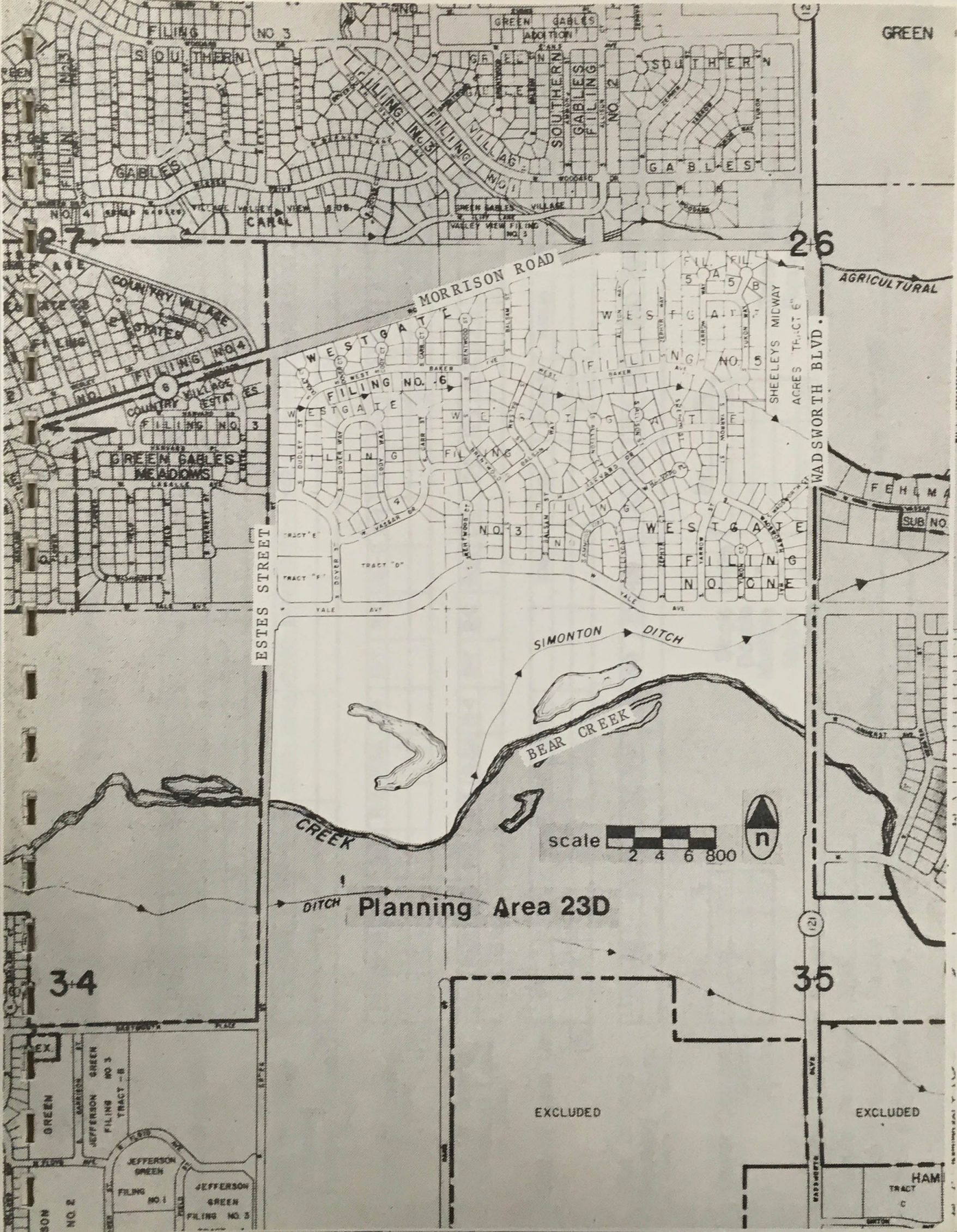
FILLING NO. 96

FILLING NO. 97

FILLING NO. 98

FILLING NO. 99

FILLING NO. 100



City Of Lakewood

Planning Area No. 24

valid as of 6 1 72

ACRES IN LAKEWOOD 314 ACRES IN JEFFERSON COUNTY 396

Population Dist.

	UND-5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-64	65-74	75-84
M	53	10	9	27	42	13	6	10	8	4	6	7	4	19	64	71	65	23	4	10
F	42	8	9	22	31	9	14	15	8	1	4	3	8	25	71	82	62	29	10	6
%	9.9	1.9	1.9	5.1	7.6	2.5	2.1	2.6	1.7	.5	1.0	1.0	1.3	4.6	14.1	16.0	13.3	5.4	1.5	1.7

Dist Of Owner Occupied Housing Values (In Dollars)

	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
				4	17	38	55
%				3.5	14.9	33.3	48.2

Dist. Of Zoning (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	34.6	53.9		10.1	11.0											160.4			
%	11.1	17.3		3.3	3.5											51.6			

Dist. Of Zoning Of Vacant Land (In Acres)

	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
	11.4	28.8		2.7	.8											138.6			

Dist Of Land Use

	SAL.	DEI.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK & REC.	AG & W.C.	UNDEVELOPED
	69.8		10.0		.6		7.0	1.7		205.2	
%	28.6		3.2		.2		2.2	.5		65.3	

Dist. Of Rental Housing Values (Dollars Per Month)

	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C
					3	76	68	9	1	

	No.	%
Owner Occupied Rental	136	44
Vacant	163	53
	11	3

	No.	%
Single Units	151	49
Double		
Multiple	159	51
Mobile		
Total	310	100

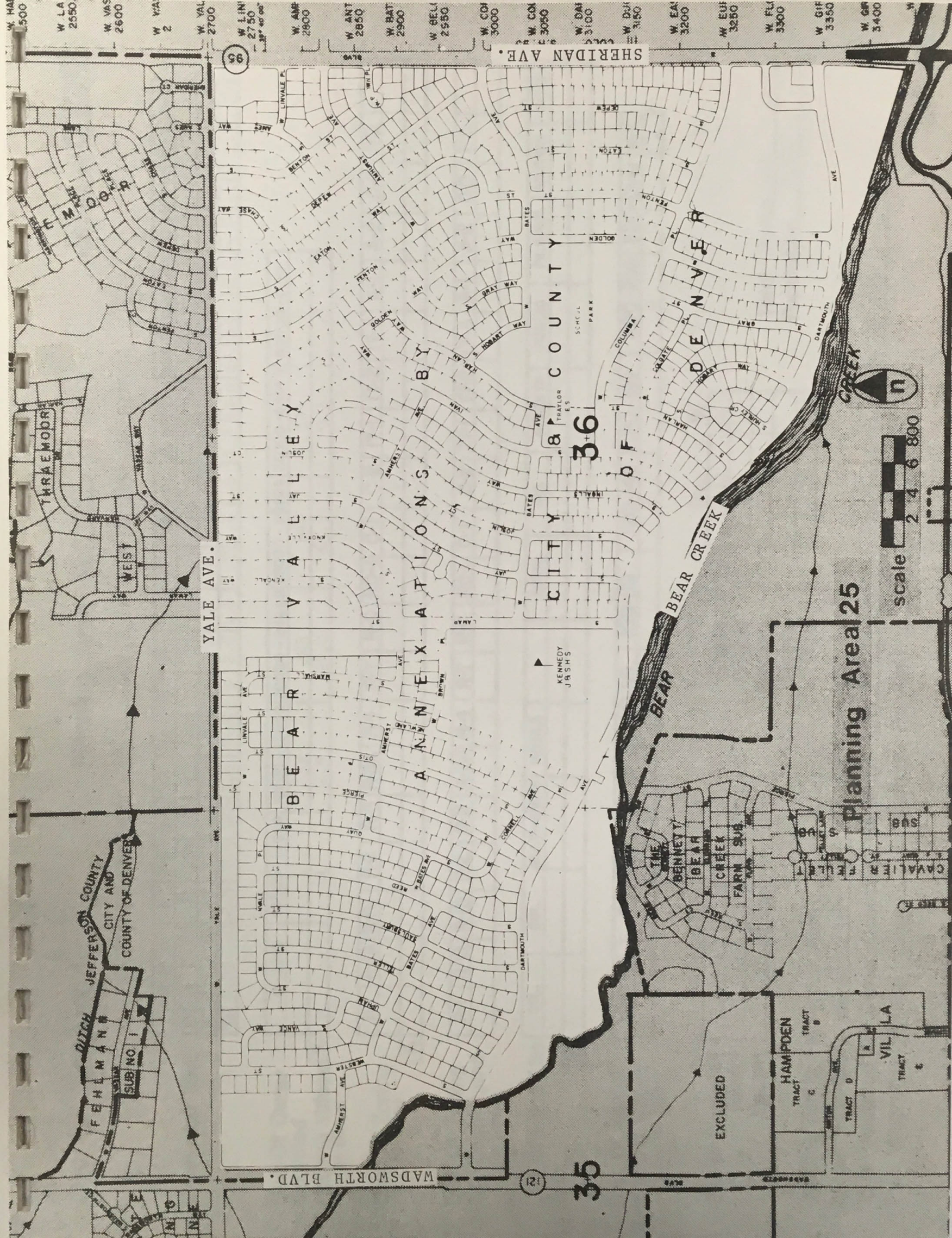
Total Acres 710
Population 955 (1,132)

Dwelling Units Per Gross Acre 1.0

People Per Gross Acre 3.0

Total Valuation Of Owner Occupied Housing Units \$5,515,000; Average Per Unit \$48,377

Total Aggregate Rental \$24,965; Average Per Unit \$159



YALE AVE.

36

36

SHERIDAN AVE.

KENNEDY PARK

BEAR CREEK

Planning Area 25

scale 2 4 6 800

n

JEFFERSON COUNTY CITY AND COUNTY OF DENVER

HAMPDEN TRACT C

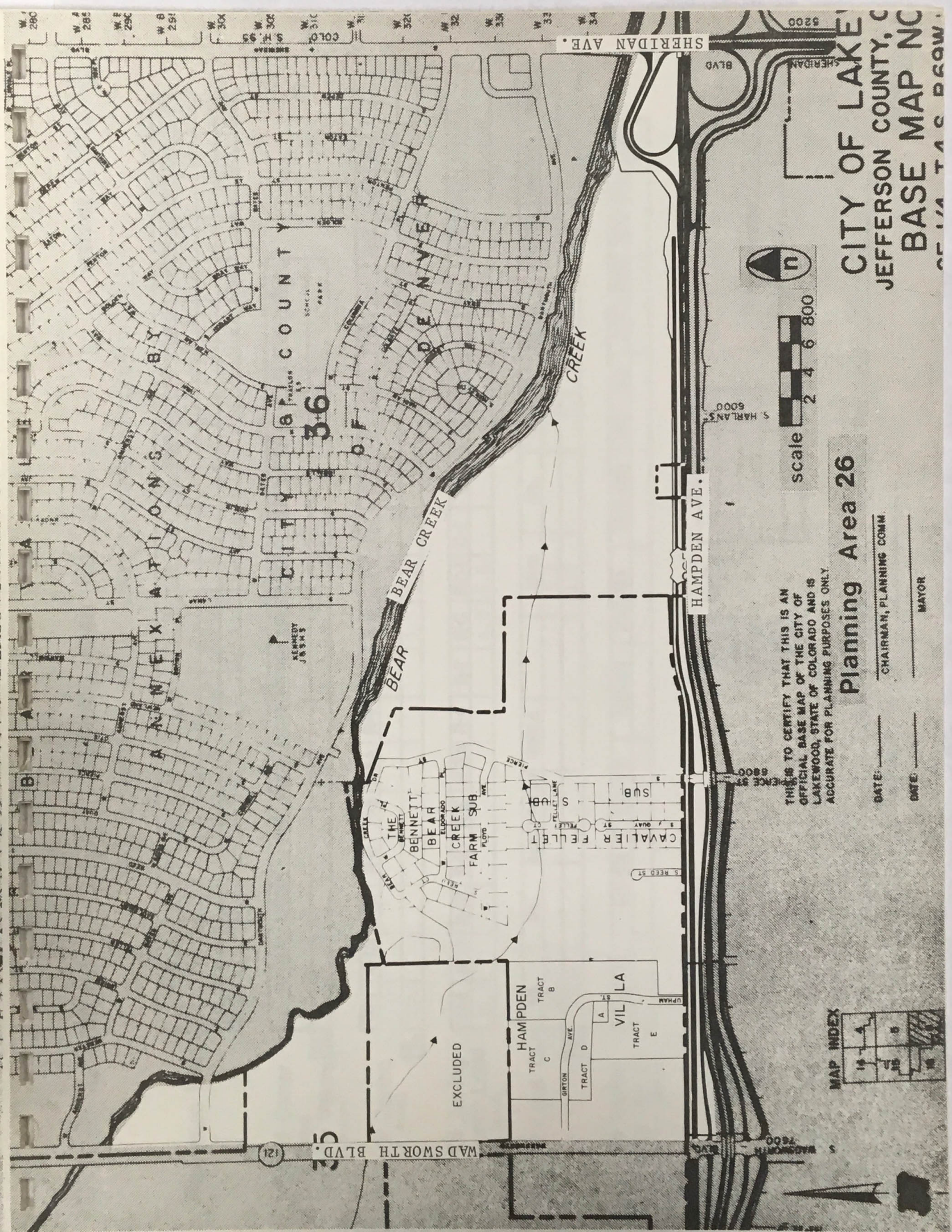
VIL LA TRACT E

EXCLUDED

121

35

WADSWORTH BLVD.



scale 2 4 6 800



THIS IS TO CERTIFY THAT THIS IS AN
OFFICIAL BASE MAP OF THE CITY OF
LAKEWOOD, STATE OF COLORADO AND IS
ACCURATE FOR PLANNING PURPOSES ONLY.

Planning Area 26

CHAIRMAN, PLANNING COMM.

DATE: _____

MAYOR

DATE: _____

MAP INDEX



City Of Lakewood

Planning Area No. 26

valid as of 6 1 72

ACRES IN LAKEWOOD 187 ACRES IN JEFFERSON COUNTY 38

UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-84
M	4	6	4	7	15	8	5	4	3	1	2		1	13	26	16	2			4	1
F	12	4	3	17	15	6	5	2	6	1	1			16	29	9	5		1	3	2
%	6.1	3.8	2.7	9.2	11.5	5.3	3.8	2.3	3.4	.8	1.1	1.1	.4	11.1	21.0	9.5	2.7		.4	2.7	1.1

Population Dist.

Dist. Of Owner Occupied Housing Values (In Dollars)

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
2		2	2	23	20	3
%	3.8		3.8	44.2	38.5	5.7

Dist. Of Zoning (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
35.7								2.8	9.5						96.5			21.2
%	19.4							1.5	5.2						52.4			11.5

Dist. Of Zoning Of Vacant Land (In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	O-O	P.D.
21.6								2.8	6.8						75.4			21.2

Dist. Of Land Use

SGL.	DEL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
27.3				3.3		10.0	1.2	2.0	143.5	
%	14.6			1.8		5.3	.6	1.1	76.7	

Dist. Of Rental Housing Values (Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied Rental Vacant

No.	%
59	91
5	8
1	1

Single Units
Double
Multiple
Mobile
Total

No.	%
65	100
65	100

Dwelling Units Per Gross Acre .3

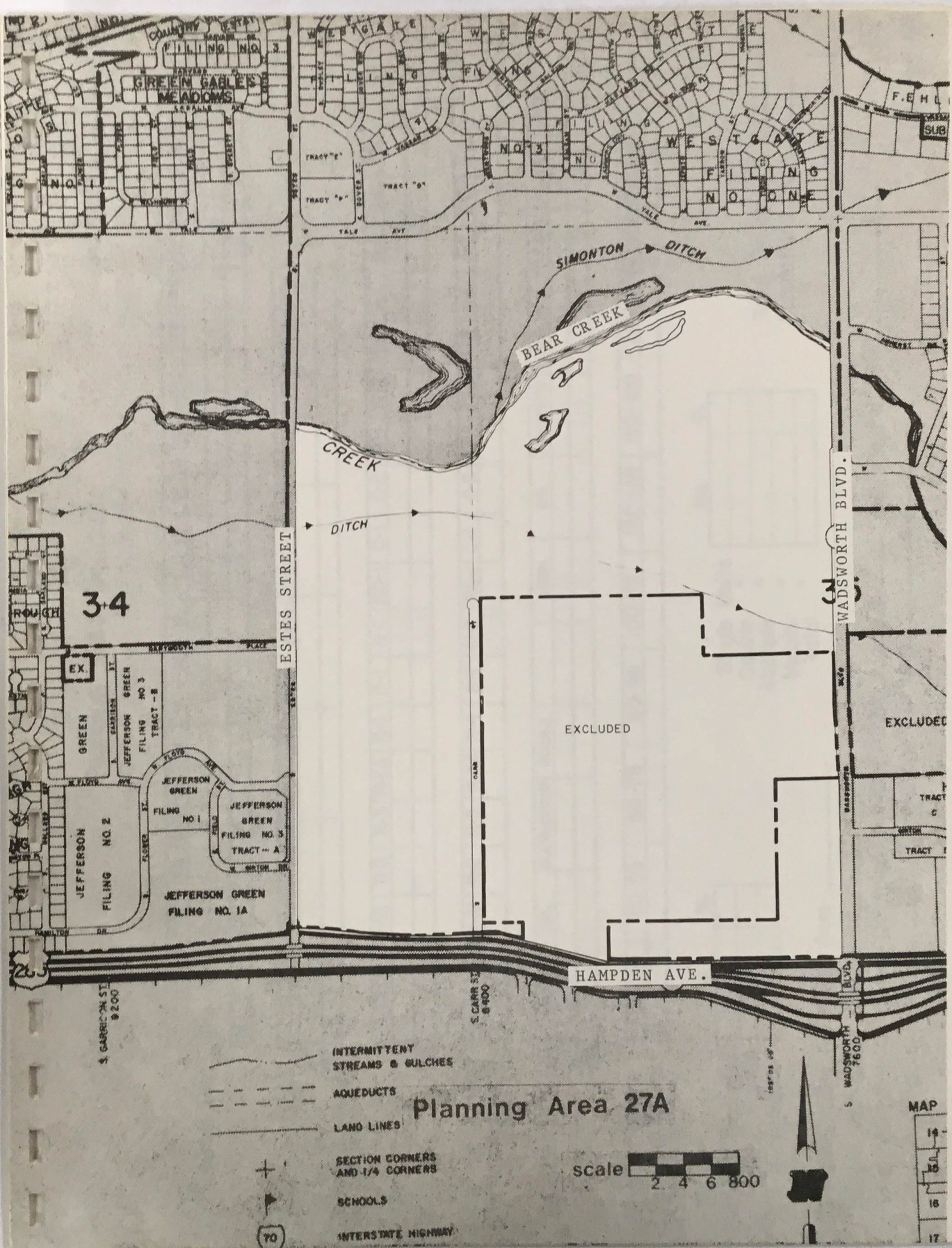
People Per Gross Acre 1.4

Total Valuation Of Owner Occupied Housing Units \$1,820,000

Total Aggregate Rental ; Average Per Unit

Total Acres 225
Population 262 (789)

Average Per Unit \$35,000



GREEN GABLES MEADOWS

BEAR CREEK

SIMONTON DITCH

CREEK

DITCH

WADSWORTH BLVD.

HAMPDEN AVE.

Planning Area 27A

INTERMITTENT
STREAMS & GULCHES

AQUEDUCTS

LAND LINES

SECTION CORNERS
AND 1/4 CORNERS

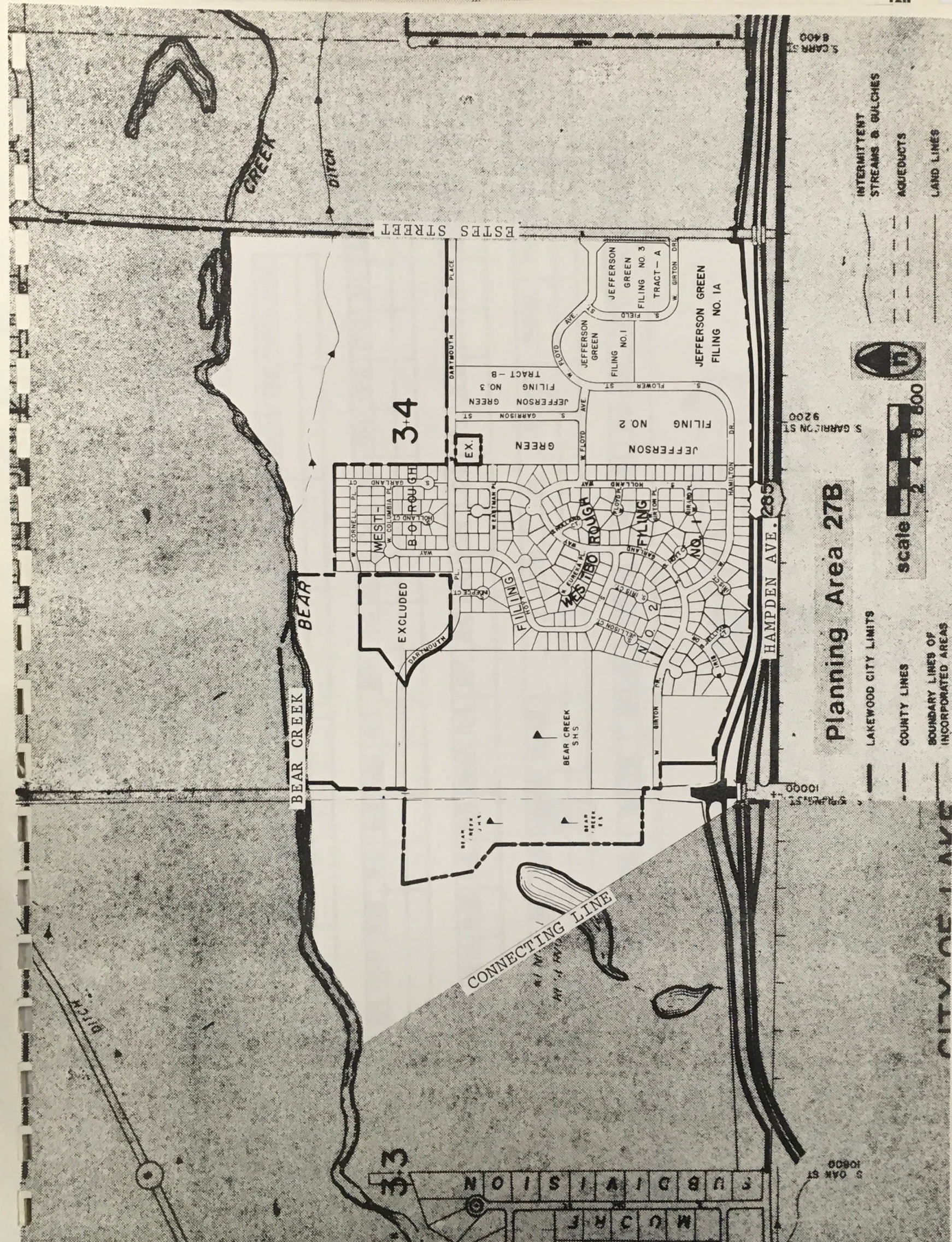
SCHOOLS

INTERSTATE HIGHWAY

scale 2 4 6 800

MAP

14
15
16
17



INTERMITTENT
STREAMS & GULCHES
AQUEDUCTS
LAND LINES



scale 0 200 400 600

Planning Area 27B

LAKEWOOD CITY LIMITS
COUNTY LINES
BOUNDARY LINES OF
INCORPORATED AREAS

S. CARR ST
8400

S. GARRISON ST
9200

HAMPDEN AVE. 285

S. RICHMOND ST
10000

S. OAK ST
10600

ESTES STREET

34

BEAR CREEK

BEAR CREEK

CONNECTING LINE

33

SUBDIVISION

MUCRA

WEST-BOURGH

WESTBOURGH

FILING

NO. 1

NO. 2

NO. 3

NO. 4

NO. 5

NO. 6

NO. 7

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NO. 274

NO. 275

NO. 276

NO. 277

NO. 278

NO. 279

City Of Lakewood

Planning Area No. 27B

valid as of 6 1 72

ACRES IN LAKEWOOD 198 ACRES IN JEFFERSON COUNTY 60

UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-01
M																					
F																					
%																					

Population Dist.

0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%						

Dist. Of Owner Occupied Housing Values
(In Dollars)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
																		181.1
%																		88.3

Dist. Of Zoning
(In Acres)

R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
																		85.4

Dist. Of Zoning Of Vacant Land
(In Acres)

SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK & REC.	AG & W.C.	UNDEV.
53.4		32.4				14.6	.6		96.8	
%	27.0	16.3				7.3	.3		49.1	

Dist. Of Rental Housing Values
(Dollars Per Month)

UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

No.	%
5	70
1	15
1	15

Owner Occupied Rental Vacant

No.	%
7	100
7	100

Single Units
Double
Multiple
Mobile
Total

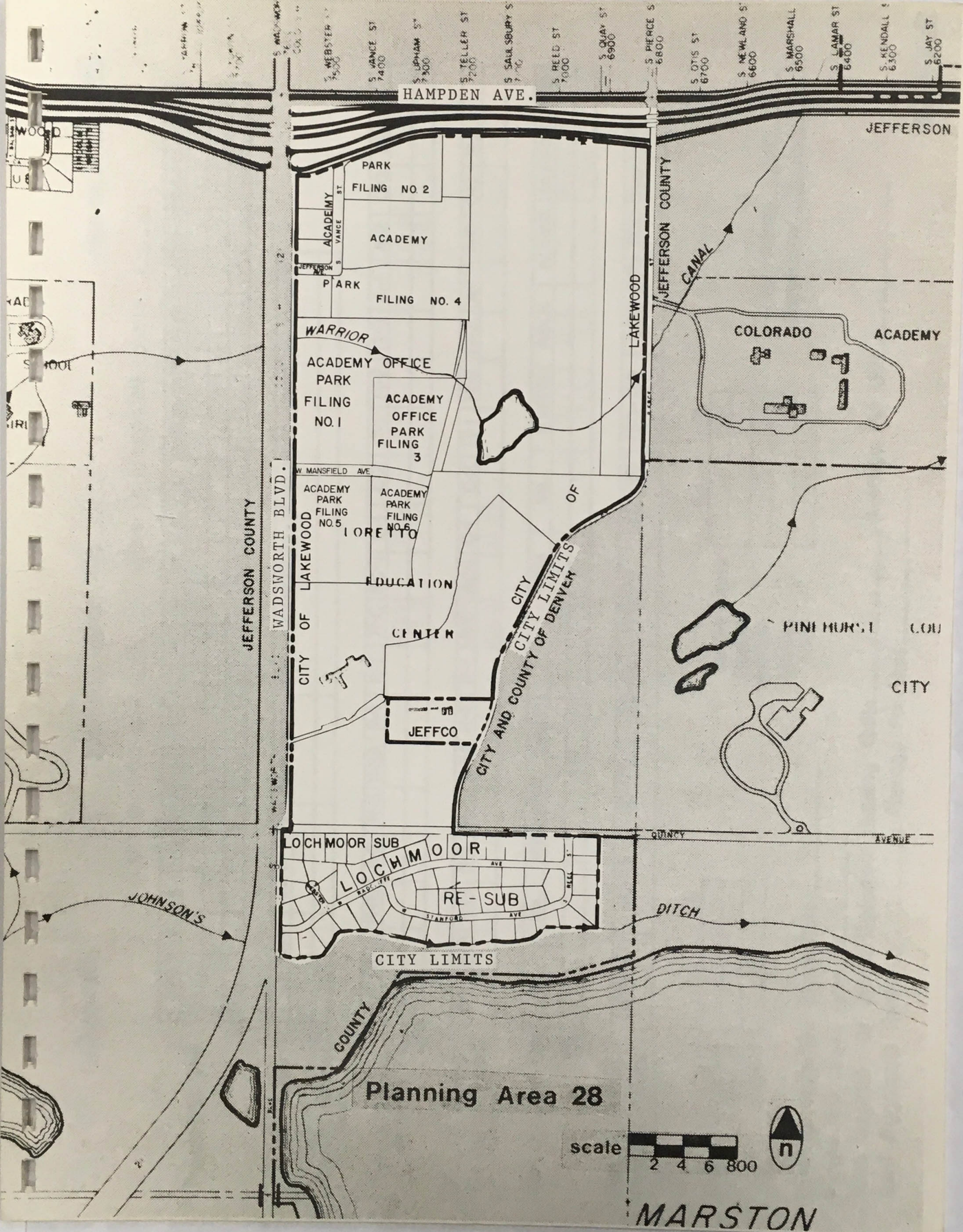
Total Acres 258
Population 22 (1,873)

Dwelling Units Per Gross Acre .04

People Per Gross Acre .1

Total Valuation Of Owner Occupied Housing Units _____; Average Per Unit _____.

Total Aggregate Rental _____; Average Per Unit _____.



HAMPDEN AVE.

JEFFERSON

PARK

FILING NO. 2

ACADEMY

PARK

FILING NO. 4

WARRIOR

ACADEMY OFFICE

PARK

FILING NO. 1

ACADEMY

OFFICE

PARK

FILING NO. 3

ACADEMY

PARK

FILING NO. 5

ACADEMY

PARK

FILING NO. 6

LORETTO

EDUCATION

CENTER

JEFFCO

CITY AND COUNTY OF DENVER

COLORADO

ACADEMY

PINE HURST

CITY

CITY

LOCHMOOR SUB

LOCHMOOR

RE-SUB

CITY LIMITS

Planning Area 28

scale

2 4 6 800



MARSTON

City Of Lakewood

Planning Area No. 28

valid as of

6 1 72

ACRES IN LAKEWOOD 272 ACRES IN JEFFERSON COUNTY 1

UND. 5	5	6	7-9	10-13	14	15	16	17	18	19	20	21	22-24	25-34	35-44	45-54	55-59	60-61	62-64	65-74	75-0V
M	2			3			3	2	1	2		1	2	2	4	10	4	1	1	2	1
F			1	5	1	1		1			1		2	6	10	26	7	5	7	20	20
%	1.3		.6	5.2	.6	.6	1.9	1.9	.6	1.3	.6	.6	2.6	5.2	9.1	23.4	7.1	3.9	5.2	14.3	13.6

Population Dist.

Dist. Of Owner Occupied Housing Values	0-9999	10000-14999	15000-19999	20000-24999	25000-34999	35000-49999	50000-OVER
%							

Dist. Of Zoning (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
%									173.6		12.5						24.9		
									68.5		4.9						9.8		

Dist. Of Zoning Of Vacant Land (In Acres)	R-1	R-1A	R-1B	R-2	R-3	R-3A	R-4	R-T	R-C	RC-1	C-1	C-2	IT-1	IT-2	IT-3	A-1	A-2	C-O	P.D.
									132.0		16.7						29.1	4.0	

Dist. Of Land Use	SGL.	DBL.	MULTI-GROUP	MOBILE	COMM.	IND.	STREETS	PUBLIC	PK. & REC.	AG. & VAC.	UNDEV.
%	37.1				2.6		11.7	10.6		210.1	
	13.6				1.0		4.3	3.9		77.2	

Dist. Of Rental Housing Values (Dollars Per Month)	UND 40	40-59	60-79	80-99	100-119	120-149	150-199	200-299	300-Over	N/C

Owner Occupied Rental Vacant	No.	%
	22	76
	5	17
	2	7

Single Units	No.	%
Double	28	97
Multiple	1	3
Mobile		
Total	29	100

Total Acres 273
Population 154 (166)

Dwelling Units Per Gross Acre .1

People Per Gross Acre .6

Total Valuation Of Owner Occupied Housing Units ; Average Per Unit

Total Aggregate Rental ; Average Per Unit

PLANNING AREA 1A

This area has no permanent residents except those connected with the American Medical Center. The AMC is an internationally known center for treatment of and research on cancer. It has sixty-six beds, some fifty of which are used at any time. The AMC has 187 employees, with a payroll of approximately \$1,000,000 per year. There are 25 physicians or professional research workers and 40 other health professionals or para-professionals. The balance are clerical, food service and maintenance employees.

A small shopping center, offering convenience food shopping and dry cleaning, exists in the northeastern quadrant of the area, facing 20th Avenue. The center principally serves residents of the neighboring City of Edgewater.

JCRS Shopping Center is a medium sized shopping center bordering on West Colfax and Pierce Streets. It offers the wide range of shopping goods normally expected in centers of this size. In 1970, its twenty-one tenants rented 216,000 square feet.

Nearly half of the area in this Planning Area is currently used for agricultural purposes or is unused. This land surrounds and is owned by the American Medical Center, which does not anticipate needing most of it for

future expansion. AMC has retained a planning consultant to advise its Board of Directors about how best to develop the unused portions.

presently, although it is currently the site of significant educational and administrative activities. The area today has about twenty-five permanent residents, with an estimated population between fifty-five and seventy persons. Many of the residences are semi-agricultural in nature, and a number appear to be structurally deficient or poorly maintained.

As suggested above, much of Lakewood's industrial production takes place in this area. In addition, several warehouses have been erected. The area also contains one large and several smaller junk yards and some commercial activity.

The significant industrial area, which is located on the west side of Quail Street from 12th Avenue to 13th Avenue, is the temporary site of the new Rocky Campus of the Denver Community College. The college, however, was built about a mile southeast of the present site, and plans to move shortly. Immediately adjacent, and to the south, is the combined administrative and service center for the Jefferson County Public Schools.

The second substantial area in the area is the industrial area developed on the southeast corner of the intersection of Highway 10 and Highway 100. This area is a group of light-industrial and manufacturing

PLANNING AREA 6

Planning Area 6 is largely occupied by industrial and warehousing uses presently, although it is currently the site of significant educational and administrative activities. The area contains fewer than twenty-five permanent residents, with an estimated population between sixty-five and seventy persons. Many of the residences are semi-agricultural in nature, and a number appear to be structurally deficient or poorly maintained.

As suggested above, much of Lakewood's industrial production takes place in this area. In addition, several warehouses have been erected. The area also contains one large and several smaller junk yards and some agricultural activity.

Two significant subareas break this pattern. One, on the west side of Quail Street from 12th Avenue to 13th Avenue, is the temporary site of the Red Rocks Campus of the Denver Community College. The college, however, owns land about a mile southwest of its present site, and plans to move shortly. Immediately adjacent, and to the south, is the combined administrative and service center for the Jefferson County R-1 School District.

The second substantial break in the area's industrial pattern has developed on its southwest corner, where a grouping of highway-oriented and tourist-oriented

activities (hotel, gas station, ski equipment rentals) has developed. This area also includes an automobile agency which is strongly oriented towards recreational vehicles. In addition, it is the location of two furniture stores which include retail sales along with their warehousing.

Office and administrative activities. There are also several machine shops and vehicle maintenance shops in the grounds. Activities are conducted mostly in low buildings with one twenty-story office building a notable exception. Internal circulation is excellent and the area is more than 75% open space, most of it covered by well-landed vegetation.

Total employment ranges from 2,300 to 2,500 people.

PLANNING AREA 13

Planning Area 13 is the Denver Federal Center. There are few permanent residents of the area, and all are connected with the Federal Center.

The Federal Government uses the Center mainly for office and administrative activities. There are also several machine shops and vehicle maintenance shops on the grounds. Activities are conducted mostly in low buildings with one twenty-story office building a notable exception. Internal circulation is excellent and the area is more than 70% open space, most of it covered by well-tended vegetation.

Total employment ranges from 6,300 to 6,500 people.

PLANNING AREA 14A

Planning Area 14A is presently outside the limits of the City of Lakewood; consequently, it does not come within the authority of the City for planning purposes except for the location of major streets.

It is included here, however, because of its importance for Lakewood in the near future.

The Planning Area is composed of a section of land until recently owned by the Federal Government. Three important projects will determine the basic pattern of land use in this square mile. Two of them are educationally oriented, and occupy approximately one third of the section. In the northeastern corner, the Jefferson County R-1 School District has broken ground for a Vocational - Technical Center. When completed in 1973, this facility will be capable of serving a student, teacher and staff population of 2,050 (tentatively, 2,000 students).

Directly to the south lies the Red Rocks Campus of Community College. The first phase of construction for the campus is scheduled for completion in mid - 1973, and will house the college's academic and business classes, which account for approximately 90 percent of the campus' activity. The second phase will see the transfer of remaining industrial course activities from their present location on Quail Street, to a separate building on the campus. A tentative third phase includes the construction

of a building to house a center for the handicapped.

Projected enrollments for the Red Rocks Campus indicate a rise from the present 2,460 to 2,600 in September 1973 and 4,450 in the fall of 1980. At that time, there would be more than 200 full time faculty and conceivably another 200 part time faculty and staff.

A third major impact on land use is the Sixth Avenue West Subdivision. Approximately 85 condominium townhouses and 120 single family detached homes are being constructed at present. A second filing is expected soon.

As a result of these activities, and other surrounding anticipated development, it is projected that Planning Area 14A will attract approximately 35 acres of community and neighborhood commercial activity by 1980.

Table 1

Zoning Districts

R-1	-	One-Family Residential
R-1A	-	One-Family Residential
R-1B	-	One-Family Residential
R-2	-	Two-Family Residential
R-3	-	Multi-Family Residential
R-3A	-	Multi-Family Residential
R-4	-	Multi-Family Residential 20-50 Units per acre
R-C1	-	Business & Professional
R-C	-	Retail
C-1	-	Retail
C-2	-	Wholesale
IT-1	-	Manufacturing
IT-2	-	Manufacturing
IT-3	-	Manufacturing
A-1	-	General Farm Public Use
A-2	-	Feed Lots, etc.
C-O	-	General Public Use
P.D.	-	Planned Development

Table 2
Land Use Definitions

CATEGORY	DEFINITION
Single	One-family housing units.
Double	Two-family housing units; e.g.; Duplex.
Multi-Group	Multiple family dwellings - more than two housing units per structure; group quarters or resident institutions for permanent non-family occupancy in which lodging accommodations are provided with or without meals.
Mobile	Includes mobile homes or mobile home parks of a permanent nature.
Commercial	Includes all commercial residential establishments including hotels, motels, and tourist accommodations; all retail establishments selling commodities or retail type services to the consumer; and commercial activities that are of an intensive or obnoxious nature. Includes all service type activities, e.g.; office building or office space. Included are administrative and governmental services; finance, real estate, and insurance operations; business services; and professional services such as medical, dental offices, engineering, legal, and accounting and consulting firms.
Industrial	Includes warehousing and storage facilities related to manufacturing, transportation, retail trade and other activities.
Streets	Includes land use activities associated with the movement and distribution of goods, people and vehicles. Included are transportation rights-of-way such as street and highway systems, railroad tracks and off-street parking.

Table 2 (cont.)

CATEGORY	DEFINITION
Public	Included are all cultural, educational, medical, protective and correctional facilities, cemeteries and uses which are financed by public funds and operated as of the governmental function; and uses which are operated by private individuals or institutions for a public purpose, but with limited public control or accessibility, such as structures and facilities related to telephone, telegraph, radio and television systems, etc.
Parks & Recreation	Consists of small developed sites and/or an intensive use of the land, and consists of both indoor and outdoor recreation facilities such as stadiums, race tracks and tennis courts, etc. Parks, playfields and undeveloped forest land, whether publicly or privately owned, are also included.
Agricultural & Vacant	Includes all operations associated with the growing of agricultural crops, plants or trees, etc; and grazing and keeping or feeding of livestock for animal products, animal increase or value increase. Also includes any absence of activity on land: both land and structures where no apparent activity is intended or where some activity is intended, but not existing. Water areas such as creeks, lakes, reservoirs and swamps, etc., are included.

PART TWO

DEMOGRAPHIC PROFILE

A. Current Population

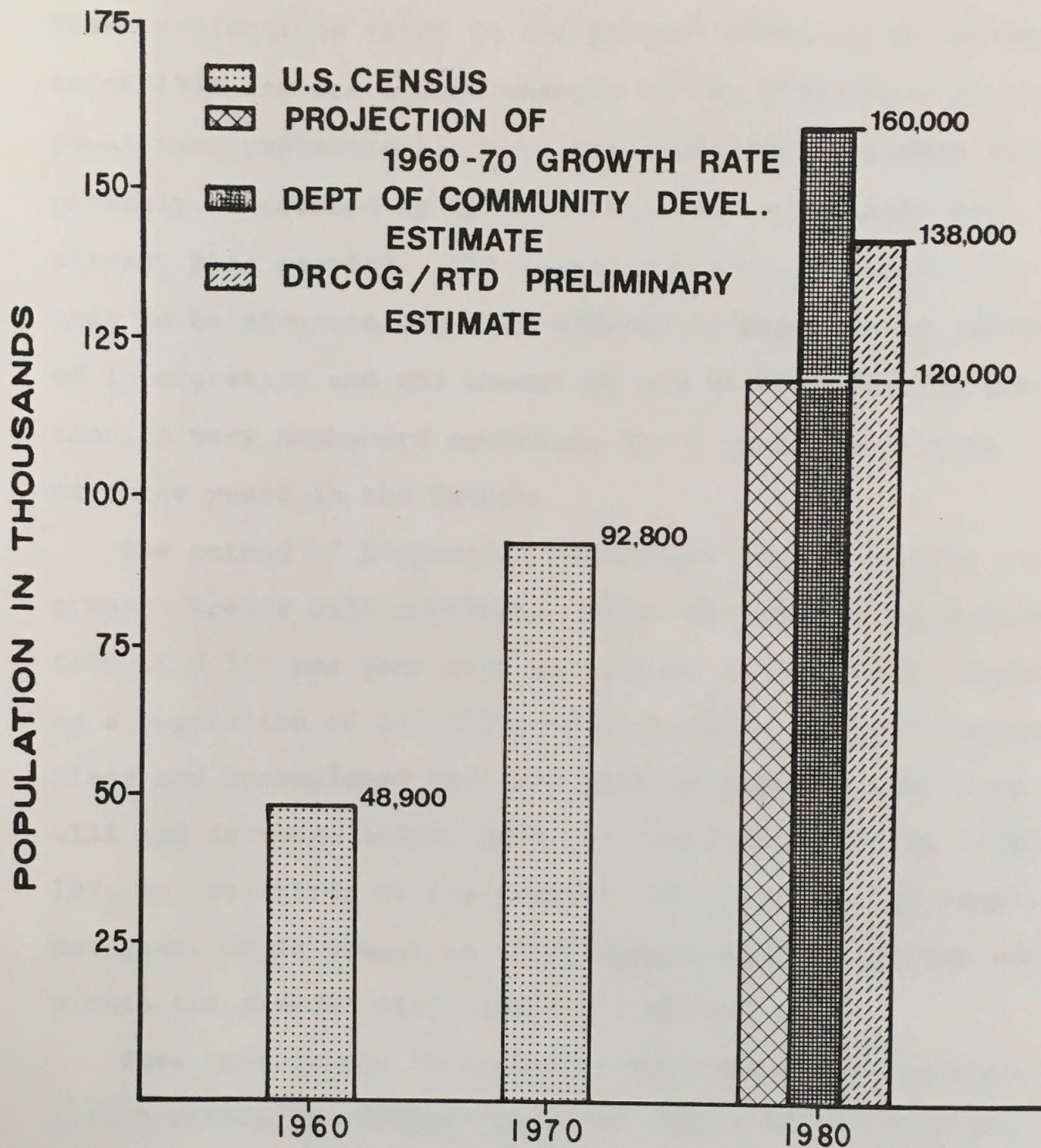
The estimation of current population and its future projection are among the most vexing problems facing the suburban planner. Virtually every other type of plan--for schools, streets, parks, police protection, City staff--depends crucially on good estimates of total numbers. But this basic piece of information is often the most difficult to come by in a reliable way when extremely small areas are considered. Fortunately, because of circumstances that will be explained in C. Methodology, we feel we have the ability to make accurate estimates of Lakewood's current population.

As of April 1970, according to the U.S. Census, the population of Lakewood was 92,787. As of July 1, 1973, it is estimated the population of Lakewood will be 120,000. That increase of 27,000 people over three years and three months calculates to an annual increase of 8,300 people. This is an increase of 8.9% per year, and a 29% total increase in population since the 1970 Census.

The methodology of developing this current population estimate is discussed below in C.

B. Projected Population

Even more difficult than the estimating of current population is the projection of future population. Figure 1 shows three projections that were made for the year 1980.

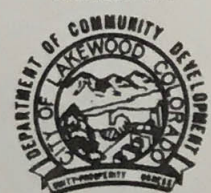


LAKEWOOD POPULATION : 1960 & 1970 WITH ESTIMATES FOR 1980

Source: 1960 and 1970 U. S. Census plus estimates of agencies indicated.

Figure 1

PREPARED BY:



These projections refer to the present boundary of Lakewood as of 1973 and are a good example of the difficulty in making population projections. Even the DRCOG/RTD* estimate will probably be reached by 1976 and the lowest estimate has already been reached. The reason for this difficulty is that to be accurate one must accurately predict the amount of in-migration and the amount of new housing unit construction, a very haphazard operation for a period more than two or three years in the future.

One method of projecting population is by assuming any present trends will continue. Thus, an increase in population of 8,300 per year over the entire decade would result in a population of 175,000 people in 1980. Present builder plans and uncompleted building permits indicate that rate will not decrease before 1975. A slowdown in growth after 1975 to two-thirds of its present rate (about 5,000 people per year) would result in a 1980 population of 160,000 people within the present city limits of Lakewood.

That this is not inconsistent with the potential population within the present physical limits of Lakewood can be seen from the Population Potential Report in this Profile. That report estimated that the minimum number of people that Lakewood could hold within present city limits was 172,000. The maximum number of people was estimated to be 218,000.

* Denver Regional Council of Governments and Regional Transportation District.

C. Methodology

Estimating present population for Lakewood is made easy by the fact that Lakewood did not start issuing new building permits in its own name until several months after the 1970 Census was taken. Thus, by adding together all the City building permits that have Certificates of Occupancy and the building permits from Jefferson County records for the period between the time the Census was taken and the time the City began issuing permits, we have an accurate picture of how many new housing units there are in Lakewood since April 1970 when the Census was taken.

By multiplying this number of new units by a population per household of 3.6 (4.0 for single family units and 3.2 for multiple) and by applying birth and death rates to the 1970 Census base population, we arrive at a Lakewood population of 119,762 as of July 1, 1973. The number of new units per Planning Area and the 1970 and 1973 populations for each Planning Area are shown in Table 1.

Following are the calculations made in estimating a 1973 population for Lakewood:

- Base 1970 Census population	92,787
- Number of new single family units--3,440 and multiple family units--3,147	
- 3,440 x 4.0 people per household	13,760
- 3,147 x 3.2 people per household	10,058
- Net natural increase	<u>3,157</u>
- Total 1973 population	119,762

Table 1
1973 Estimated Population

PLANNING AREA	1970 CENSUS POPULATION	NEW SINGLE FAMILY UNITS	NEW MULTI- FAMILY UNITS	TOTAL NEW UNITS	1973 TOTAL POPULATION
1	2217	1	21	22	2,348
1A	-	-	-	-	-
1B	2139	3	2	5	2,234
2	6411	15	80	93	6,951
3	4944	36	379	415	6,476
4	3236	41	12	53	3,558
5	3100	68	310	378	4,439
6	-	-	-	-	-
7/8	2374	9	183	192	3,095
9	5791	7	222	229	6,726
10	5696	6	164	170	6,454
11	7336	66	209	275	8,519
12	5980	8	58	66	6,407
13	-	-	-	-	-
14	295	13	65	78	575
14A	-	-	-	-	-
15	3803	159	4	163	4,574
16	7006	50	667	717	9,556
17	3233	709	28	737	6,268
18	3885	36	12	48	4,194
19	9053	108	161	269	10,305

Table 1 (cont.)

PLANNING AREA	1970 CENSUS POPULATION	NEW SINGLE FAMILY UNITS	NEW MULTI- FAMILY UNITS	TOTAL NEW UNITS	1973 TOTAL POPULATION
20A	6503	34	54	88	7,035
20B	1310	406	72	478	3,190
21	-	-	-	-	-
22	3545	1035	-	1035	7,804
23A	575	56	-	56	806
23B	2451	60	-	60	2,779
23C	29	74	-	74	350
23D	482	89	96	185	1,169
24	955	36	-	36	1,132
25*					
26	262	6	152	158	789
27A	-	-	-	-	-
27B	22	306	196	502	1,873
28	154	3	-	3	166
TOTAL	92,787	3,440	3,147	6,587	119,762

* Planning Area 25 is in the City and County of Denver

SOURCE: 1970 Census, Community Development Department
Building Permits

SECTION 2: AGE AND SEX - 1970 & 1960

A. Present Age and Sex Distribution

The distribution of Lakewood's population by age and sex is presented in Figure 2 for 1970 and 1960, based on Official U.S. Census reports.

It can be seen at a glance that Lakewood is a community oriented toward young families. More than half the adult population is between the ages of twenty-five and forty-five. Similar bulges in the ages between five and fifteen indicate that the children of these people are now putting pressure on elementary and junior high schools.

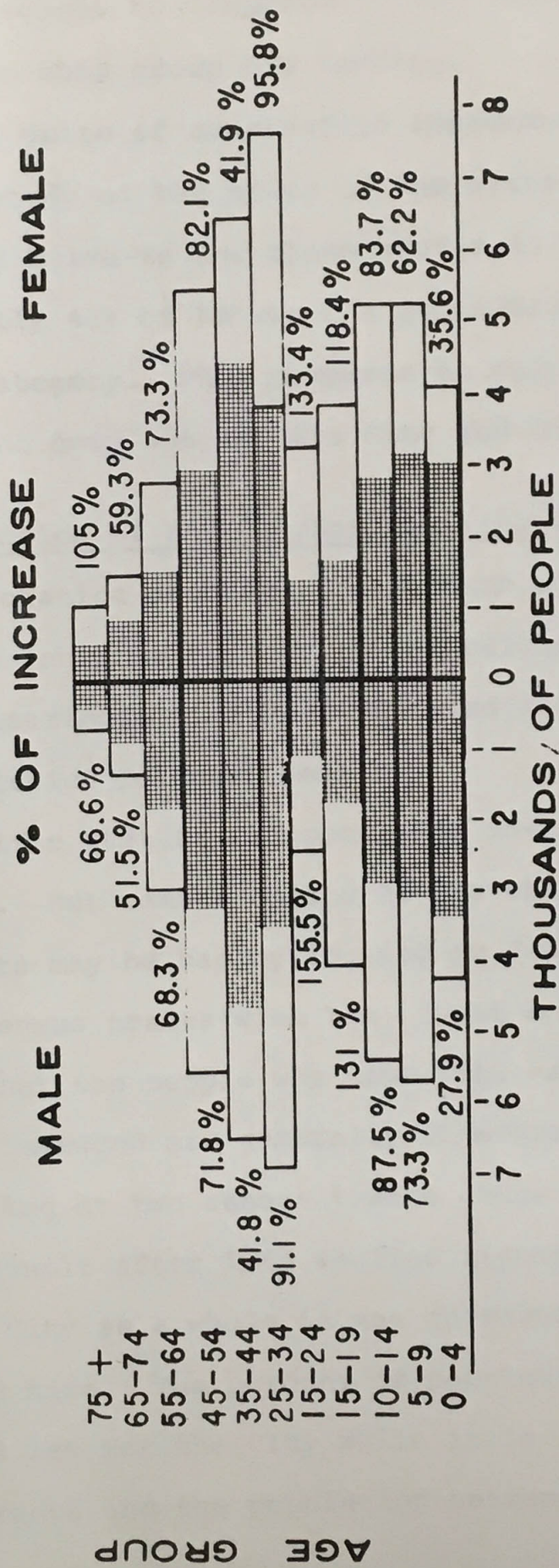
Especially high percentage increases were recorded in the age group between twenty-five and thirty-five among adults, and among children aged five to fourteen. Low percentage increases were noted in the age group under five.

Taken together, these statistics support the general impression that most of Lakewood's new residents are young people who have already begun families.

The highest percentage increase was achieved by young adults (ages twenty to twenty-four). This probably reflects the increased availability of apartments and townhouses with substantial amenities. It is expected that this trend will continue.

Substantial percentage increases were also recorded for late teen-agers (fifteen to nineteen). Although the smallest of any of the five year age groups under age

 1960 POPULATION
 1970 POPULATION



CITY OF LAKEWOOD AGE PYRAMID

Source: 1960 and 1970 U. S. Census of Population and Housing. Bureau of Census.

Figure 2



twenty, the rapidity with which the late teen population grew gives weight to complaints that recreational opportunities for this group are lacking.

But in spite of substantial increases in these age groups, a study of the shape of the pyramid will show that the largest bulge is for those adults in the 25 to 54-year range. Fully 42% of Lakewood's population falls within this age category. This compares to only 37% for the Denver SMSA and only 35% for the City and County of Denver.

B. Projection of the Age/Sex Distribution

In-migration accounts for so much of Lakewood's population increase that it is impossible to project the age/sex distribution without detailed knowledge of these characteristics for newcomers.

Specific statistics concerning in-migrants are unavailable. But some estimate of the characteristics of in-migrants may be had by looking at Census information for the census tracts with the newest housing. This assumes that the people who move into newly constructed homes in Lakewood are generally in-migrants to the City.

Looking at two census tracts where 75% of the housing has been built after 1965 we find significant differences from the City as a whole in age characteristics and in household size. The percent of population under the age of ten is 16% for the City while it is 24% for these two census tracts and the population between the ages of 25

and 54 is 46% for them compared to 42% for the entire City. In addition these two census tracts show an average number of people per household of 3.7 compared to 3.3 for the City. These figures indicate that in-migrants to Lakewood tend to be younger and have larger families than those already living here.

National data indicate a sharp drop in fertility rates among younger women of child-bearing age. At the same time, the eighteen to twenty-four year old group (the post World War II baby boom) looms ever larger in the nation's population. If this trend is reflected in Lakewood, there would be important changes in the mix of both public and private services demanded.

SECTION 3: OCCUPATION

A. General Labor Force Indicators

No major changes have taken place in the general characteristics of Lakewood's labor force between 1960 and 1970. The unemployment rates for men and women remained low, both in absolute terms and in relation to regional and national unemployment trends.

One significant trend reflected in the data in Table 2 is the increase in the number of women in the labor force. In Lakewood the female labor force participation rate increased from 37% in 1960 to 45% in 1970. The fact that the male labor force participation rate decreased can probably be explained by the increasing number of young people who stay in school longer or go on to school after high school. (A labor force participation rate for a particular population group is calculated by dividing the total population of that particular group into the number of people in the group who are working or actively seeking work.)

B. Occupational Distribution

Data relating to the distribution of occupations of Lakewood residents are presented in Tables 3 and 4.

The people of Lakewood are predominantly white-collar workers. Almost 60% of Lakewood's male labor force and more than 70% of the female labor force can be so charac-

Table 2
General Labor Force Indicators

	1960 LAKEWOOD	1970 LAKEWOOD
Male Population Age 14 & Over	20,413	31,325
Males In Labor Force	17,352	25,342
Male Labor Force Participation Rate	85.0%	81.0%
Male Employed	16,836	24,699
Male Unemployment Rate	3.0%	2.5%
Female Population Age 14 & Over	21,646	33,592
Females In Labor Force	7,975	14,965
Female Labor Force Participation Rate	37.0%	45.0%
Female Employed	7,743	14,456
Female Unemployment Rate	2.9%	3.4%
Total Population Over Age 14	42,059	64,917
Population In Labor Force	25,327	40,307
Total Labor Force Participation Rate	60.2%	62.0%
Total Employed	24,570	39,155
Unemployment Rate	3.0%	2.8%

SOURCE: 1960 and 1970 Census

Table 3
Percentage Distribution Of Occupations ,1960

TYPE OF OCCUPATION	MALE	FEMALE
Professional, Technical and Kindred	19.4	16.5
Managers, Officials and Proprietors (incl. farm)	20.6	6.6
Clerical	7.6	42.0
Sales	9.6	8.4
Craftsmen, Foremen and Kindred	18.9	1.1
Operatives and Kindred	12.1	5.4
Private Household Services	-	5.5
Services, Except Private Household	3.8	11.6
Laborers, Except Mine	5.1	0.3
Occupation Not Reported	2.6	2.7

SOURCE: 1960 Census

Table 4
Percentage Distribution Of Occupations ,1970

TYPE OF OCCUPATION	MALE	FEMALE
Professional and Technical	24.3	20.3
Managerial and Administrative	16.4	4.3
Sales	11.9	8.9
Clerical	7.5	45.4
Craftsman and Foreman	20.4	-
Operators (except transport equipment)	5.8	5.2
Transport Equipment Operators	4.5	-
Laborers	2.7	2.3
Farm Proprietors and Managers	.4	.3
Service Workers (except private household)	6.0	11.8
Private Household Workers	-	1.5

SOURCE: 1970 Census

terized. Comparable national rates at the same date were 37% and 54% respectively.

Even more impressive is the fact that 40% of Lakewood's male residents are professionals, technical workers, managers and proprietors. This compares favorably to the national figure of 23.3% in this category.

About half of Lakewood's female labor force do clerical and sales work, much higher than the national average of 37.5%. In addition, 25% are in professional, technical and managerial work, noticeably higher than the 17% national figure.

C. Places of Work

Data from the 1970 Census concerning the workplace of Lakewood residents is presented in Table 5. The map clearly shows that Lakewood has many characteristics of a "bedroom" community. Over half of the resident work force (51.2%) works in the Denver Central Business District or in some other part of Denver. Next in importance is Jefferson County where 34.1% of Lakewood's resident work force is employed.

These figures presented in Table 5 differ only slightly from 1960. In 1960, 48.5% worked in Denver compared to 51.2% in 1970 and in 1960, 36.6% worked in Jefferson County compared to 34.1% in 1970. The latter numbers do not indicate a decrease in employment in

Table 5
Lakewood Residents' Place Of Work In 1970

	NUMBER	PERCENT
All Workers	38,407	100.0%
Inside SMSA	36,113	94.0%
Denver CBD	3,634	9.5%
Remainder of Denver	16,011	41.7%
Arapahoe County	2,061	5.4%
Adams County	1,029	2.7%
Boulder County	269	.7%
Jefferson County	13,109	34.1%
Outside SMSA	595	1.5%
Not Reported	1,687	4.4%

SOURCE: 1970 Census

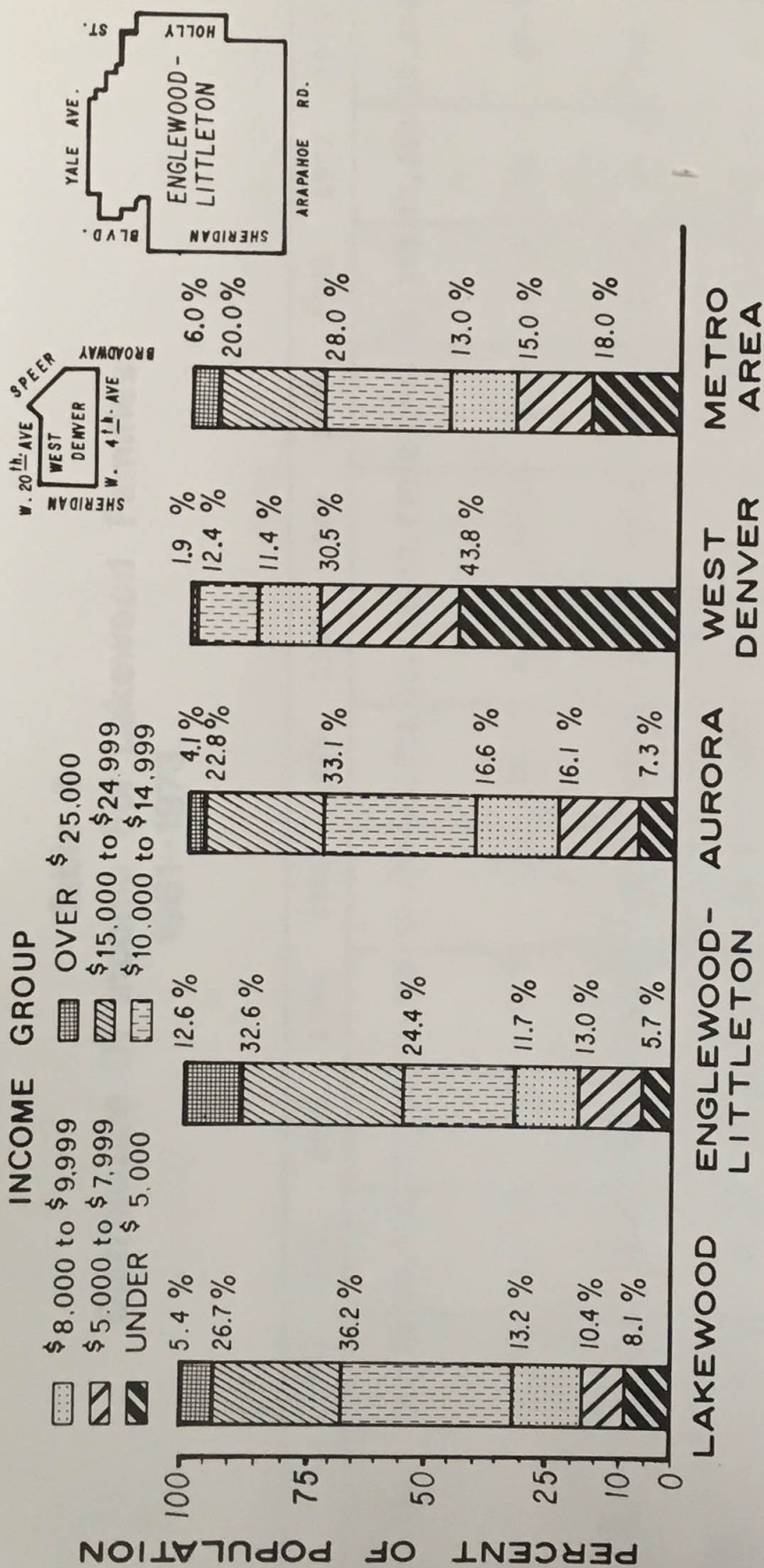
Jefferson County but rather reflects an in-migration to Lakewood of people whose place of work lay outside of Jefferson County. In terms of absolute numbers the number of Lakewood residents who worked in Jefferson County increased from 9,300 to over 13,000.

SECTION 4: INCOME

The distribution of income for Lakewood's families is presented in Figure 3 and Table 6.

Several trends are notable. One is that relatively high income families (over \$15,000) form the largest income group, with the middle income families (\$10,000 to \$14,999) forming the second largest segment. The relative affluence of Lakewood families is underscored by the fact that the Englewood/Littleton area (population 60,000) is the only other area of comparable size in the metropolitan area with a higher percentage of families with incomes over \$25,000 a year. It should be noted, however, that despite this affluence over one-fourth of the families in Lakewood have incomes under \$10,000.

Another trend concerns low income families. The number of families with incomes less than \$5,000 has not decreased over the past twelve years. There are now 1,728 such families compared to 1,694 in 1964. Of course, due to population growth, the percent of low income families has decreased from 10.8% in 1961 to 6.2% in 1973.



FAMILY INCOME DISTRIBUTION

Source: Denver Post Consumer Analysis, 1971.

Figure 3



Table 6
Distribution Of Income For Lakewood Families
1961-1973

	1961	1962	1963	1964	1965	1966	1967	1969	1970	1971	1972	1973
Total No. of Families	15,668	16,748	18,799	19,900	22,000	22,732	23,554	23,770	23,931	25,778	27,304	27,876
% over \$15,000	7.9	9.2	8.0	8.0	7.6	14.7	11.6	17.6	23.3	31.3	32.1	39.4
% \$10,000 to \$14,999	25.2	26.1	27.6	26.1	27.8	27.8	33.2	37.4	30.0	36.4	36.2	32.7
% \$8,000 to \$9,999	25.3	23.5	22.9	21.5	20.8	24.7	25.8	22.1	20.2	13.0	13.2	11.1
% \$5,000 to \$7,999	30.8	29.4	35.7	34.0	36.1	24.4	22.9	17.1	17.8	10.4	10.4	10.6
Under \$5,000	10.8	11.8	5.8	10.4	7.7	8.4	6.5	5.8	8.7	8.9	8.1	6.2

SOURCE: Denver Post Annual Consumer Analysis

SECTION 5: MOBILITY

For many planning purposes, an important fact about people is the frequency with which they change their residence, and the distance they move. A highly mobile population is less likely to have a long term view of the community and its needs. On the other hand, if a community has a high proportion of long-term residents, they are likely to take a longer term view and also to be more acutely concerned about proposed change.

Precise data concerning the mobility of Lakewood's residents is not available but there are other measures which can give us an idea of the mobility of Lakewood's residents.

The increase in population alone from 48,000 in 1960 to 92,000 in 1970, and to approximately 120,000 in 1973, indicates the amount of new families living in Lakewood. This tells us the amount of in-migration into Lakewood but does not give us a measure of mobility of families once they have moved into Lakewood.

For that information several types of data from the 1970 Census will be helpful. Table 7 shows the place of residence in 1965 of all those persons who were over 5 years old in 1970. The information shows that only 42% lived in the same house in 1965 as they did in 1970. Almost one-fourth of those over 5 years old in Lakewood in 1970 had lived outside the Denver Metropolitan Area

Table 7 **Residence In 1965 Of 1970 Lakewood** **Residents Over 5 Years Old**

Number of persons five years old and over	80,550	
Same house in 1965 as in 1970	33,283	42%
Different house		
In central city of Denver region	11,317	14%
In other part of Denver region	16,838	21%
Outside of the Denver region	18,323	23%
North and West	14,793	
South	3,530	
Abroad	789	1%

SOURCE: 1970 U. S. Census

in 1965. The fact that 35% of those over 5 years old lived somewhere else in the Denver region in 1965, tends to support the widely held belief that much residential mobility is accounted for by people who are moving into better houses after deciding to establish a permanent home in the Denver area.

Table 8 gives some slightly different information. It tells what year those families in Lakewood, at the time of the Census had moved into their housing unit and it tells us when the housing structures in Lakewood were built. A comparison of the years 1965 to 1970 between the two sets of information shows that while over 17,000 families moved into their housing unit since 1965 only 7,000 of the housing structures were built during that same time. Even taking into account that some of the structures contained multiple units, that leaves 7,000 or 8,000 families who moved into non-new housing in Lakewood. To be open for in-migrating families that housing had to be vacated by someone. This tends to show that even for those people living in Lakewood there is a high rate of mobility.

Table 8
Housing Measures Of Mobility

YEAR MOVED INTO UNIT	FAMILIES
1968 to March 1970	11,464
1965 to 1967	6,295
1960 to 1964	5,185
1950 to 1959	3,550
1949 or earlier	1,028

YEAR STRUCTURE WAS BUILT	STRUCTURES
1969 to March 1970	1,846
1965 to 1968	5,269
1960 to 1964	7,858
1950 to 1959	8,981
1940 to 1949	2,538
1939 or earlier	1,758

SOURCE: 1970 Census

PART THREE

LAKEWOOD'S POPULATION POTENTIAL

SECTION 1: INTRODUCTION

This Part is the result of an investigation of the population potential of Lakewood. The purpose of the study was to estimate the potential population capacity of the City of Lakewood based on zoning (both developed and vacant) currently in effect.

The methodology involved utilized all residential zoning classifications currently in use. The numerical factors used to determine the minimum and maximum dwelling units per acre are the allowable number of units per acre derived from the applicable zoning regulations. Thus, for R-2, the range of allowable units per acre is a minimum of 4.8 and a maximum of 6.9, while for R-4 it is a minimum of 20 and a maximum of 50 units per acre.

The total numbers representing the population potential describe a range in population due to the fact that zoning is not always developed to the minimum or maximum allowable units per acre. The numbers representing Lakewood's average persons per unit are based on U. S. Census information.

All of the population projections are based on the assumption that no changes or additions in zoning will be made after this point in time. In other words, the projections are made using the current zoning (February 1973) of Lakewood and does not, for example, assume that some of the agriculturally zoned land will be zoned

residential in the future. Industrial and commercial zoning are not included because of their general exclusion of residential units.

The series of tables immediately following shows the zoned acreage and population potential on a Planning Area basis. The distinction between "Developed Zoning" and "Vacant Zoning" is that the former is where there is already existing development although it may not be fully developed. The latter is land that is completely vacant. The total of these two gives the total population potential.

The use of Planning Areas allows application of the information to Long Range Planning policies. The information collected has two direct applications.

The first is as a measure of growth. The data collected on a regular systematic basis reflects Lakewood's population capacity at a particular point in time. Used in this fashion, the report can serve as a pulse of the City's direction in terms of population growth.

The second application is as a measure of vacant zoning potential. Vacant zoning figures reflect potential population capacities if vacant land were developed in accordance with existing zoning regulations.

The total figures for Lakewood's potential population are as follows:

Population Developed Zoning	134,358 - 170,552
Population Vacant Zoning	<u>38,215</u> - <u>47,807</u>
Lakewood's Potential Population	172,573 - 218,359

SECTION 2: PLANNING AREA POPULATION POTENTIAL

On the following pages are Tables for all of Lakewood's Planning Areas indicating the population potential of each.

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 1

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS/ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5		3.9		R-1		3.5		3.9	
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A	3.00	5.8 14.4	17 - 43	2.15	36 - 93	R-3A		5.8 14.4		2.15	
R-3	71.12	5.8 21.8	412 - 1550		887 - 3333	R-3	24.30	5.8 21.8	141 - 529		303 - 1139
R-4		20 50				R-4		20 50			
R-T	5.48	18	98	3.9	212	R-T	.12	18	2	3.9	4
A-1		1				A-1		1			
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 1,135 - 3,638

POPULATION VACANT ZONING — 307 - 1,143

POTENTIAL TOTAL — 1,442 - 4,781

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 1A

POTENTIAL POPULATION (DEVELOPED ZONING)					POTENTIAL POPULATION (VACANT ZONING)						
ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5		3.9		R-1		3.5		3.9	
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4		2.15		R-3A		5.8 14.4		2.15	
R-3	.20	5.8 21.8	1 - 4		2 - 9	R-3	3.60	5.8 21.8	21 - 78		45 - 168
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1	1.72	1	1	3.9	4	A-1	65.08	1	65	3.9	253
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 6 - 13

POPULATION VACANT ZONING — 298 - 421

POTENTIAL TOTAL — 304 - 434

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 1B

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	27.78	3.5	97	3.9	379	R-1	6.75	3.5	23	3.9	92
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2	63.38	4.8	304-437	2.7	821-1180	R-2	20.55	4.8	98-142	2.7	266-383
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3	41.30	5.8	239-900		515-1935	R-3	1.40	5.8	8-30		
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1		1		3.9		A-1		1		3.9	
A-2		1				A-2		1			
P-D	4.47		100	2.15	215	P-D					

POPULATION DEVELOPED ZONING — 1,930 - 3,709

POPULATION VACANT ZONING — 375 - 541

POTENTIAL TOTAL — 2,305 - 4,250

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 2

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	301.10	3.5	1053	3.9	4110	R-1	30.37	3.5	106	3.9	414
R-1A	8.73	4.8	42		163	R-1A	1.20	4.8	6		22
R-1B		5.8				R-1B		5.8			
R-2	261.69	4.8	1256-1805	2.7	3391-4875	R-2	19.42	4.8	93-134	2.7	251-362
R-3A	3.60	5.8	20-52	2.15	44-111	R-3A	.90	5.8	5-13	2.15	11-28
R-3	59.30	5.8	344-1293		739-2779	R-3	7.10	5.8	41-155		88-333
R-4		20				R-4		20			
R-T		18		3.9		R-T		18		3.9	
A-1		1				A-1		1			
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 8,447 - 12,038

POPULATION VACANT ZONING — 786 - 1,159

POTENTIAL TOTAL — 9,233 - 13,197

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 3

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	139.65	3.5	488	3.9	1906	R-1	67.79	3.5	237	3.9	925
R-1A	105.39	4.8	505		1973	R-1A	44.36	4.8	213		830
R-1B	74.29	5.8	430		1680	R-1B		5.8			
R-2	57.07	4.8	274-394	2.7	739-1063	R-2	10.69	4.8	51-74	2.7	138-199
R-3A	10.95	5.8	63-158	2.15	136-340	R-3A	1.00	5.8	6-14	2.15	13-30
R-3	11.03	5.8	64-240		137-517	R-3	20.22	5.8	117-441		252-948
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	1.60	1	1.6	3.9	6	A-1		1		3.9	
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 6,577 - 7,485

POPULATION VACANT ZONING — 2,158 - 2,932

POTENTIAL TOTAL — 8,735 - 10,417

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 4

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	200.07	3.5	700	3.9	2,731	R-1	131.19	3.5	459	3.9	1,791
R-1A	92.29	4.8	443	2.7	1,728	R-1A	15.10	4.8	72	2.7	283
R-1B		5.8		2.15		R-1B		5.8		2.15	
R-2	44.10	4.8	211-304	3.9	571-821	R-2	18.05	4.8	86-124	3.9	234-336
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3	11.60	5.8	67-253	3.9	145-544	R-3	2.30	5.8	13-50	3.9	28-108
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1		1				A-1		1			
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 5,175 - 5,824

POPULATION VACANT ZONING — 2,336 - 2,518

POTENTIAL TOTAL — 7,511 - 8,342

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 5

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	6.72	3.5	23	3.9	92	R-1	6.50	3.5	23	3.9	89
R-1A	76.23	4.8	366		1427	R-1A	28.36	4.8	136		531
R-1B		5.8				R-1B	6.03	5.8	35		136
R-2	104.77	4.8	503-729	2.7	1358-1952	R-2	17.34	4.8	83-120	2.7	225-323
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3		5.8				R-3		5.8			
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	15.53	1	15	3.9	58	A-1	40.57	1	40	3.9	156
A-2		1				A-2		1			
P-D	15.44		337	2.15	724	P-D					

POPULATION DEVELOPED ZONING — 3,659 - 4,253

POPULATION VACANT ZONING — 1,137 - 1,235

POTENTIAL TOTAL — 4,796 - 5,488

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 6

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1	3.00				
R-1A		4.8		3.9		R-1A				3.9	
R-1B		5.8				R-1B					
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4				R-3A		5.8 14.4			
R-3	.15	5.8 21.8	1-3	2.15	2-7	R-3	.25	5.8 21.8	1-5	2.15	2-11
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1	12.10	1	12	3.9	47	A-1	16.95	1	17	3.9	66
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 49 - 54

POPULATION VACANT ZONING — 109 - 118

POTENTIAL TOTAL — 158 - 172

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 7/8

POTENTIAL POPULATION (DEVELOPED ZONING)					POTENTIAL POPULATION (VACANT ZONING)						
ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	38.76	3.5	135	3.9	529	R-1	3.75	3.5	13	3.9	51
R-1A	39.78	4.8	191		745	R-1A	.20	4.8	1		4
R-1B		5.8				R-1B	.20	5.8	1		4
R-2	12.93	4.8	62-89	2.7	167-243	R-2	13.60	4.8	65-94	2.7	176-253
R-3A	29.24	14.4	169-421	2.15	364-905	R-3A		14.4		2.15	
R-3	15.70	21.8	91-342		196-736	R-3	3.00	21.8	17-65		36-140
R-4		50				R-4		50			
R-T		18				R-T		18			
A-1		1		3.9		A-1	15.40	1	15	3.9	58
A-2	18.40	1	18		70	A-2		1			
P-D	6.9		40	2.15	86	P-D					

POPULATION DEVELOPED ZONING — 2,157 - 3,314

POPULATION VACANT ZONING — 329 - 510

POTENTIAL TOTAL — 2,486 - 3,824

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 9

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS /UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS/ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS /UNIT	TOTAL PERSONS
R-1	297.00	3.5	1039	3.9	4054	R-1	37.10	3.5	130	3.9	506
R-1A	8.18	4.8	39		153	R-1A	3.7	4.8	18		69
R-1B		5.8				R-1B		5.8			
R-2	115.26	4.8	553-795	2.7	1494-2147	R-2	33.35	4.8	160-230	2.7	432-621
R-3A		5.8		2.15		R-3A		5.8	129-487	2.15	279-1047
R-3	127.75	5.8	741-2785		1593-5988	R-3	22.35	5.8	86-215		185-462
R-4	2.90	20	58-145		125-312	R-4	4.30	20			
R-T	1.80	18	32	69		R-T		18			
A-1		1		3.9		A-1		1		3.9	
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 7,488 - 12,723

POPULATION VACANT ZONING — 1,471 - 2,705

POTENTIAL TOTAL — 8,959 - 15,428

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 10

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	206.48	3.5	722	3.9	2818	R-1	18.38	3.5	64	3.9	251
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2	139.51	4.8	669-962	2.7	1808-2599	R-2	61.10	4.8	293-421	2.7	792-1138
R-3A		5.8				R-3A		5.8			
R-3	162.60	5.8	943-3545	2.15	2027-7621	R-3	39.77	5.8	231-867	2.15	496-1864
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	3.76	1	3	3.9	12	A-1	.42	1		3.9	
A-2		1				A-2		1			
P-D	19.15		292	2.15	628	P-D					

POPULATION DEVELOPED ZONING — 7,295 - 13,680

POPULATION VACANT ZONING — 1,539 - 3,253

POTENTIAL TOTAL — 8,834 - 16,933

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 11

POTENTIAL POPULATION (DEVELOPED ZONING)					POTENTIAL POPULATION (VACANT ZONING)						
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	49.83	3.5	175	3.9	680	R-1	47.92	3.5	168	3.9	654
R-1A	58.96	4.8	283		1104	R-1A	5.46	4.8	26		102
R-1B		5.8				R-1B		5.8			
R-2	305.53	4.8	1471-2115	2.7	3972-5710	R-2	95.91	4.8	460-662	2.7	1243-1787
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3	55.53	5.8	322-1210		692-2603	R-3	5.25	5.8	30-114		65-246
R-4		20				R-4		20	50		
R-T		18		3.9		R-T		18		3.9	
A-1		1				A-1		1			
A-2		1				A-2		1			
P-D	36.55		237	2.15	509	P-D					

POPULATION DEVELOPED ZONING — 6,957 - 10,606

POPULATION VACANT ZONING — 2,064 - 2,789

POTENTIAL TOTAL — 9,021 - 13,395

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 12

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	280.60	3.5	982		3830	R-1	78.42	3.5	274		1070
R-1A	1.85	4.8	9	3.9	35	R-1A	2.73	4.8	13	3.9	51
R-1B		5.8				R-1B		5.8			
R-2	290.61	4.8	1395-2005	2.7	3766-5414	R-2	22.46	4.8	108-155	2.7	291-418
R-3A	3.30	14.4	19-47		41-102	R-3A		14.4			
R-3	.05	5.8	0-1	2.15	0-2	R-3	6.45	5.8	37-141	2.15	80-302
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	29.00	1	29	3.9	113	A-1		1		3.9	
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 7,786 - 9,496

POPULATION VACANT ZONING — 1,492 - 1,841

POTENTIAL TOTAL — 9,278 - 11,337

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 13

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	74.40	3.5	260	3.9	1016	R-1		3.5		3.9	
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2		4.8		2.7		R-2		4.8		2.7	
R-3A		5.8				R-3A		5.8			
R-3		5.8		2.15		R-3		5.8		2.15	
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	95.58	1	96	3.9	374	A-1		1		3.9	
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 1,390

POPULATION VACANT ZONING —

POTENTIAL TOTAL — 1,390

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 14

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)						
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	
R-1		3.5		3.9		R-1		3.5		3.9		
R-1A		4.8				R-1A	38.80	4.8	186			726
R-1B		5.8				R-1B		5.8				
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7		
R-3A		5.8 14.4		2.15		R-3A		5.8 14.4		2.15		
R-3	.50	5.8 21.8	3-11		6-23	R-3	3.50	5.8 21.8	20-76			44-164
R-4		20 50				R-4		20 50				
R-T		18				R-T		18				
A-1		1		3.9		A-1		1		3.9		
A-2		1				A-2		1				
P-D	40.45	15	614	2.15	1320	P-D						

POPULATION DEVELOPED ZONING — 1,326 - 1,343

POPULATION VACANT ZONING — 770 - 890

POTENTIAL TOTAL — 2,096 - 2,233

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 15

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	10.43	3.5	36	3.9	142	R-1		3.5			
R-1A	96.81	4.8	465	3.9	1812	R-1A	161.10	4.8	773	3.9	3016
R-1B		5.8				R-1B		5.8			
R-2	1.52	4.8	7-10	2.7	20-27	R-2		4.8		2.7	
R-3A	23.40	5.8	136-337		292-724	R-3A		5.8			
R-3	63.15	5.8	366-1377	2.15	787-2960	R-3		5.8			
R-4		20				R-4	6.30	20	126-315	2.15	271-677
R-T		18				R-T		18			
A-1		1				A-1		1			
A-2		1				A-2	387.60	1	387	3.9	1509
P-D	12.60	10	126	2.15	271	P-D					

POPULATION DEVELOPED ZONING — 3,324 — 5,936

POPULATION VACANT ZONING — 4,796 — 5,202

POTENTIAL TOTAL — 8,120 — 11,138

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 16

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./ MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5		3.9		R-1		3.5		3.9	
R-1A	308.72	4.8	1482		5779	R-1A	94.20	4.8	452		1763
R-1B	47.65	5.8	276		1078	R-1B	1.25	5.8	7		28
R-2	95.83	4.8	460-661	2.7	1242-1785	R-2	3.89	4.8	19-27	2.7	50-72
R-3A	12.52	5.8	73-180		156-388	R-3A	6.65	5.8	39-96		83-206
R-3	39.75	5.8	230-866		496-1863	R-3	31.02	5.8	180-676		387-1454
R-4		20		2.15		R-4		20		2.15	
R-T		18				R-T		18			
A-1	6.40	1	6		3.9	24	A-1	32.71	1		33
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 8,776 - 10,918

POPULATION VACANT ZONING — 2,440 - 3,652

POTENTIAL TOTAL — 11,216 - 14,570

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973
BY PLANNING AREA

Planning Area 17

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	96.56	3.5	338	3.9	1318	R-1		3.5		3.9	
R-1A	54.45	4.8	261		1019	R-1A		4.8			
R-1B	4.83	5.8	28		109	R-1B		5.8			
R-2	6.98	4.8	33-48	2.7	90-130	R-2		4.8	6.9	2.7	
R-3A		5.8		2.15		R-3A		5.8	14.4	2.15	
R-3	.36	5.8	2-8		4-17	R-3		5.8	21.8		
R-4		20				R-4		20	50		
R-T		18				R-T			18		
A-1	99.49	1	99	3.9	386	A-1		1		3.9	
A-2		1				A-2		1			
P-D	117.00	5.8	678	2.7	1832	P-D					

POPULATION DEVELOPED ZONING — 4,758 - 4,811

POPULATION VACANT ZONING —

POTENTIAL TOTAL — 4,758 - 4,811

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 18

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	39.38	3.5	138	3.9	537	R-1	13.62	3.5	48	3.9	186
R-1A	27.97	4.8	134		523	R-1A	5.23	4.8	25		98
R-1B	6.51	5.8	38		147	R-1B	3.80	5.8	22		86
R-2	167.67	4.8	805-1157	2.7	2173-3124	R-2	88.56	4.8	425-611	2.7	1148-1650
R-3A	1.60	5.8	9-23	2.15	20-49	R-3A		5.8		2.15	
R-3	1.50	5.8	9-33		20-70	R-3	2.50	5.8	15-55		31-117
R-4	18.50	20	370-925		795-1989	R-4		20			
R-T	32.80	18	590	3.9	1269	R-T		18		3.9	
A-1	49.21	1	49		191	A-1	134.81	1	135		526
A-2		1				A-2		1			
P-D	106.44		1994	2.15	4287	P-D					

POPULATION DEVELOPED ZONING — 9,962 - 12,186

POPULATION VACANT ZONING — 2,075 - 2,663

POTENTIAL TOTAL — 12,037 - 14,849

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 19

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	19.27	3.5	67	3.9	265	R-1	30.55	3.5	107	3.9	417
R-1A	7.75	4.8	37		144	R-1A	8.48	4.8	41		160
R-1B	350.68	5.8	2034		7932	R-1B	1.08	5.8	6		24
R-2	47.16	4.8	226-325	2.7	611-879	R-2	7.58	4.8	36-52	2.7	98-143
R-3A	2.56	5.8	15-37	2.15	32-79	R-3A	3.68	14.4	21-53	2.15	46-114
R-3	3.63	5.8	21-79		45-170	R-3	.17	21.8	1-4		2-8
R-4		20				R-4		50			
R-T		18				R-T		18			
A-1	65.27	1	65	3.9	253	A-1	74.61	1	75	3.9	292
A-2	10.00	1	10		39	A-2		1			
P-D	12.20		202	2.15	434	P-D					

POPULATION DEVELOPED ZONING — 9,756 - 10,196

POPULATION VACANT ZONING — 1,039 - 1,158

POTENTIAL TOTAL — 10,795 - 11,354

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 20A

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A	7.14	4.8	34	3.9	134	R-1A	.91	4.8	4	3.9	17
R-1B	311.63	5.8	1807		7049	R-1B	10.92	5.8	63		247
R-2		4.8		2.7		R-2	3.50	4.8	17-24	2.7	45-65
R-3A	1.26	5.8	7-18		16-39	R-3A	.64	5.8	4-9		8-20
R-3	1.78	5.8	10-39	2.15	22-83	R-3		5.8		2.15	
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	37.45	1	37	3.9	144	A-1	10998	1	110	3.9	429
A-2		1				A-2		1			
P-D	9.67		30	2.15	64	P-D					

POPULATION DEVELOPED ZONING — 7,429 - 7,513

POPULATION VACANT ZONING — 746 - 778

POTENTIAL TOTAL — 8,175 - 8,291

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 20B

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A	6.78	4.8	32	3.9	127	R-1A	.52	4.8	2	3.9	10
R-1B	185.79	5.8	1078		4203	R-1B	14.52	5.8	84		328
R-2		4.8		2.7		R-2	23.09	4.8	111-159	2.7	299-430
R-3A		5.8				R-3A		5.8			
R-3		5.8		2.15		R-3		5.8		2.15	
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	27.14	1	27	3.9	105	A-1	38.21	1	38	3.9	148
A-2	9.61	1	9		35	A-2	30.69	1	30		117
P-D	10.85		96	2.15	206	P-D					

POPULATION DEVELOPED ZONING — 4,676 - 4,676

POPULATION VACANT ZONING — 902 - 1,033

POTENTIAL TOTAL — 5,578 - 5,709

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 21

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A		4.8		3.9		R-1A	1.49	4.8	7	3.9	28
R-1B		5.8				R-1B		5.8			
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4				R-3A	7.15	5.8 14.4	41-103		89-221
R-3		5.8 21.8		2.15		R-3		5.8 21.8		2.15	
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1		1				A-1		1			
A-2	2.79	1	3	3.9	10	A-2	4.46	1	4	3.9	16
P-D						P-D					

POPULATION DEVELOPED ZONING — 10 - 10

POPULATION VACANT ZONING — 135 - 267

POTENTIAL TOTAL — 145 - 277

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 22

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS/ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	52.62	3.5	184	3.9	718	R-1	32.18	3.5	112	3.9	439
R-1A	225.02	4.8	1080		4212	R-1A	30.60	4.8	147		573
R-1B	76.06	5.8	441		1720	R-1B	128.78	5.8	747		2913
R-2		4.8		2.7		R-2		4.8		2.7	
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3		5.8				R-3		5.8			
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1		1		3.9		A-1		1		3.9	
A-2	76.22	1	76		296	A-2	41.18	1	41		160
P-D	204.00		995	2.7	2686	P-D					

POPULATION DEVELOPED ZONING — 9,632

POPULATION VACANT ZONING — 4,085

POTENTIAL TOTAL — 13,717

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973
BY PLANNING AREA

Planning Area 23A

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	24.09	3.5	84	3.9	329	R-1	40.76	3.5	143	3.9	556
R-1A		4.8				R-1A	6.80	4.8	33		127
R-1B		5.8				R-1B		5.8			
R-2		4.8		2.7		R-2	5.20	4.8	25-36	2.7	67-97
R-3A		14.4		2.15		R-3A		14.4		2.15	
R-3		21.8				R-3		21.8			
R-4		50				R-4		50			
R-T		18				R-T		18			
A-1	62.65	1	62	3.9	242	A-1	127.65	1	128	3.9	498
A-2	10.36	1	10		39	A-2	128.14	1	128		499
P-D	33.77		375	2.15	806	P-D					

POPULATION DEVELOPED ZONING — 1,416 - 1,416
POPULATION VACANT ZONING — 1,747 - 1,777

POTENTIAL TOTAL — 3,163 - 3,193

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 23B

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5		3.9		R-1		3.5		3.9	
R-1A	15.71	4.8	75		294	R-1A	11.59	4.8	56		217
R-1B	139.60	5.8	810		3158	R-1B	38.70	5.8	224		875
R-2		4.8		2.7		R-2		4.8		2.7	
R-3A	2.87	5.8	17-41	2.15	36-89	R-3A	.83	5.8	5-12	2.15	10-26
R-3		5.8				R-3		5.8			
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	10.42	1	10	3.9	39	A-1	42.08	1	42	3.9	164
A-2		1				A-2		1			
P-D	11.04					P-D					

POPULATION DEVELOPED ZONING — 3,527 - 3,580

POPULATION VACANT ZONING — 1,266 - 1,282

POTENTIAL TOTAL — 4,793 - 4,862

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 23C

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A		4.8		3.9		R-1A		4.8		3.9	
R-1B	2.40	5.8	14		54	R-1B	23.65	5.8	137		535
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4				R-3A		5.8 14.4			
R-3		5.8 21.8		2.15		R-3		5.8 21.8		2.15	
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1	5.27	1	5	3.9	19	A-1	.92	1	1	3.9	4
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 73

POPULATION VACANT ZONING — 539

POTENTIAL TOTAL — 612

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 23D

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS/ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A	124.16	4.8	596	3.9	2324	R-1A	11.84	4.8	57	3.9	222
R-1B		5.8				R-1B		5.8			
R-2		4.8		2.7		R-2		4.8		2.7	
R-3A	6.28	5.8	36-90		78-194	R-3A		5.8			
R-3		5.8		2.15		R-3		5.8		2.15	
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	4.38	1	4	3.9	16	A-1	113.44	1	113	3.9	441
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 2,418 - 2,534

POPULATION VACANT ZONING — 663 - 663

POTENTIAL TOTAL — 3,081 - 3,197

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 24

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	23.22	3.5	81	3.9	317	R-1	11.38	3.5	40	3.9	155
R-1A	25.13	4.8	120		470	R-1A	28.77	4.8	138		539
R-1B		5.8				R-1B		5.8			
R-2	7.40	4.8	35-51	2.7	96-138	R-2	2.70	4.8	13-18	2.7	35-50
R-3A		5.8		2.15		R-3A		5.8		2.15	
R-3	10.22	5.8	59-223		127-479	R-3	.78	5.8	4-17		9-36
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1	79.58	1	79	3.9	308	A-1	80.79	1	80	3.9	312
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 1,318 - 1,712

POPULATION VACANT ZONING — 1,050 - 1,092

POTENTIAL TOTAL — 2,368 - 2,804

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 26

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	14.08	3.5	49	3.9	192	R-1	21.62	3.5	75	3.9	295
R-1A		4.8				R-1A		4.8			
R-1B		5.8				R-1B		5.8			
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4				R-3A		5.8 14.4			
R-3		5.8 21.8		2.15		R-3		5.8 21.8		2.15	
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1	21.16	1	21		82	A-1	75.37	1	75		295
A-2		1		3.9		A-2		1		3.9	
P-D	23.85		268	3.9	1,045	P-D					

POPULATION DEVELOPED ZONING — 1,319
POPULATION VACANT ZONING — 590

POTENTIAL TOTAL — 1,909

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 27A

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5				R-1		3.5			
R-1A		4.8		3.9		R-1A		4.8		3.9	
R-1B		5.8				R-1B		5.8			
R-2		4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A		5.8 14.4				R-3A		5.8 14.4			
R-3		5.8 21.8		2.15		R-3		5.8 21.8		2.15	
R-4		20 50				R-4		20 50			
R-T		18				R-T		18			
A-1	18.83	1	18	3.9	70	A-1	219.87	1	220	3.9	858
A-2		1				A-2		1			
P-D						P-D					

POPULATION DEVELOPED ZONING — 70

POPULATION VACANT ZONING — 858

POTENTIAL TOTAL — 928

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973

BY PLANNING AREA

Planning Area 27B

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)					
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1		3.5		3.9		R-1		3.5			
R-1A		4.8				R-1A		4.8		3.9	
R-1B		5.8				R-1B		5.8			
R-2		4.8		2.7		R-2		4.8		2.7	
R-3A		5.8				R-3A		5.8			
R-3		5.8		2.15		R-3		5.8		2.15	
R-4		20				R-4		20			
R-T		18				R-T		18			
A-1		1				A-1		1			
A-2		1		3.9		A-2		1		3.9	
P-D	201.51		1440	2.7	3888	P-D					

POPULATION DEVELOPED ZONING — 3,888

POPULATION VACANT ZONING —

POTENTIAL TOTAL — 3,888

LAKEWOOD POPULATION POTENTIAL

BASED ON ZONING AS OF FEB., 1973
BY PLANNING AREA

Planning Area 28

POTENTIAL POPULATION (DEVELOPED ZONING)						POTENTIAL POPULATION (VACANT ZONING)						
ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.		TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS	ZONING	TOTAL ACRES	UNITS / ACRE MIN./MAX.	TOTAL UNITS	LAKEWOOD AVERAGE PERSONS / UNIT	TOTAL PERSONS
R-1	37.77		3.5	132	3.9	516	R-1		3.5		3.9	
R-1A			4.8				R-1A		4.8			
R-1B			5.8				R-1B		5.8			
R-2			4.8 6.9		2.7		R-2		4.8 6.9		2.7	
R-3A			5.8 14.4				R-3A		5.8 14.4			
R-3			5.8 21.8		2.15		R-3		5.8 21.8		2.15	
R-4			20 50				R-4		20 50			
R-T			18				R-T		18			
A-1			1		3.9		A-1		1		3.9	
A-2			1				A-2	29.14	1	29		
P-D							P-D					

POPULATION DEVELOPED ZONING — 516

POPULATION VACANT ZONING — 113

POTENTIAL TOTAL — 629

2

This report was prepared by the Long Range Planning Division of the Department of Community Development, City of Lakewood, Gary E. Latham, Director.

The Long Range Planning Division

F. E. Ospina	Division Chief
L. R. Kueter	Planner*
Clay Wade	Planner
L. A. Waterman, Jr.	Planner
P. J. Lynch	Planning Technician
C. E. Worden	Secretary
C. G. Boelts	Clerk-Steno
D. Geddes	Typist
L. M. Hawley	Draftsman

*Staff member in charge.

Planning Report #18

Gas Manual for P.O. Continuation

LOGIC CROSS REFERENCE CHART

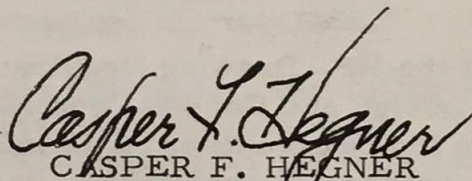
ELEMENT	FUNCTION	NEMA	MIL STD 806	STD LOGIC	ENGLISH LOGIC	NOR LOGIC	RELAY LOGIC	SWITCH LOGIC	ASA (JIC) VALVING	FLUIDIC DEVICE- TURBULENCE AMPLIFIER	FLUIDIC DEVICE- OTHER	BOOLEAN ALGEBRA OPERATOR
OR	Output If Any Control Input Is ON											$() + ()$
AND	Output If ALL Control Inputs are ON											$() \cdot ()$
NOT (INVERTER)	Single Control Input; Output Only If Input Is OFF											$()$
NOR	Output IF ALL Control Inputs Are OFF											$() ! ()$
NAND	No Output IF ALL Control Inputs Are ON											$() / ()$
FLIP-FLOP (MEMORY)	Retains Output Condition Corres- ponding to Last INPUT											

PBS P 3410.2B CHGE 2
February 1, 1966

GSA ORDER

SUBJECT: Drawing Requirements

1. PURPOSE. This order transmits changed pages to PBS P 3410.2B.
2. EXPLANATION OF CHANGE. Chap. 8-13 is revised to clarify the requirements for acoustical analyses for courtrooms and auditoriums, which are required to be submitted with the intermediate working drawings.
3. INSTRUCTIONS. Remove page 7 of chap. 8 and insert the attached new page 7 and page numbered 9 and 10 of chap. 8.


CASPER F. HEGNER

Commissioner, Public Buildings Service

Distribution: A-8; B-8 c, d, e, f, g, h; C-8 f, g, h; D-8 g; Attachment F; G-8; H-8 b, c; I-8 b 2, c; plus PBS-8; and figure 1

February 1, 1966

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Copies of the HB, Drawing Requirements, were forwarded to each regional Design and Construction Division for redistribution in the quantities indicated above. It is intended that a copy of the handbook and subsequent changes be provided to every architect and engineer of PBS engaged in the design and construction program. The remaining copies are to be provided for the use of each Schedules and Services Branch for issuance to contract architects and engineers, as required. Additional copies may be requisitioned in the usual manner.

Figure 1. Supplemental Distribution

not be completely detailed except where the degree of completeness is defined as in "Wall Sections" since labor is wasted if the drawings prove to be unacceptable. They must, however, be complete enough to permit a detailed estimate of cost.

12. SCHEDULES. Chap. 9-27 thru 29 contains a list of schedules required for the final working drawing submission and instructions for filling the schedules out. Of the schedules listed, the following are required to be filled out at the intermediate working drawing stage:

a. Interior Finish Schedule. This shall be filled out on the schedule sheet, drawing 5-1, which PBS furnishes to contract architect-engineers, based on the finishes which are specified in the approved project directive.

b. Glass Schedule. This shall be filled out in strict accordance with design data 28-30-13. It may, however, be submitted on a separate sheet of paper at the intermediate stage, but shall be incorporated on the schedule sheet, drawing 5-1, when final working drawings are submitted.

c. Interior and Exterior Materials Schedules. The following portions of the interior and exterior materials schedule, where the applicable materials are specified in the approved project directive, shall be filled out in strict accordance with the referenced design data sheets. They may be submitted on separate sheets of paper, as in b, above:

(1) Acoustical (Prefabricated Units), des. data 28-30-1.

(2) Architectural Metals, des. data 28-30-23.

d. Notes on Elevations. The exterior elevations and the interior elevations, where interior elevations are required, shall include notes to indicate materials which are specified in the approved project directive.

13. ACOUSTICAL ANALYSIS.

a. Requirements. Where a building contains a courtroom, auditorium, or similar place of assembly, an acoustical analysis shall be submitted for such space no later than the intermediate working drawings. The acoustical analysis shall consist of a recommendation for optimum reverberation time at 500 cycles per second, and a calculation of the reverberation time for the usual audience present. In addition, a statement shall be included with the analysis certifying that the construction enclosing the space, as designed, will provide a STC of not less than 50, or higher if required to provide an acceptable noise level within the space. See GSA Handbook, MECHANICAL AND ELECTRICAL ENGINEERING (PBS P 3460.1A) for requirements for noise level due to mechanical and electrical equipment and design data 28-15-3 for requirements for courtrooms.

b. Definition. The word "auditorium" as contained herein is defined as any space larger than 1,500 square feet in area or 15,000 cubic feet in volume and containing either a stage, fixed seats, or both, or if not containing either, will be used primarily for public speaking or musical presentations.

c. Drawings. All interior elevations, profile sections, and a reflected ceiling plan, in which materials are shown and noted, are required at this stage for spaces for which an acoustical analysis is required.

d. Qualified Consultant. The acoustical analysis shall be prepared by a qualified acoustical consultant or engineer. Analyses submitted by representatives of manufacturers of acoustical materials are not acceptable.

e. Review of Final Working Drawings. The acoustical consultant shall review final working drawings, and revised calculations shall be submitted to reflect any change in design from that shown in the intermediate working drawing submission.

14. INTERMEDIATE WORKING DRAWING PRINTS. Unless otherwise required by the contract, one set of sepia reproducibles is required of the contract architect-engineer for Central Office projects. The kind of prints and the number of sets required for regional projects will be determined by the region.
15. ESTIMATE OF COST. With this submission an updated estimate of cost is required. This should comprise GSA forms 123a, 123c and 123 d, of the project directive, submitted in triplicate. Reservations to be carried should be shown and also any adjustment of the cost estimate previously submitted with the tentative sketches.
16. SPECIFICATIONS. At this stage the contract architect-engineer shall submit one copy of a rough draft of the specification. The guide specifications previously furnished shall be edited and tailored to the project by deletions or additions. Fly-leaves for material and workmanship proposed for insertion shall be clipped in the appropriate sections. PBS will review the specification and comment on, or point out, irregularities which are inconsistent with Government policies. The reviewed copy will be returned to the contract architect-engineer for completion. This will form the basis for formulation of the final typed specifications.

GENERAL SERVICES ADMINISTRATION

WASHINGTON, D. C. 20405

PBS P 3410.2B CHGE 1
May 4, 1965

GSA ORDER

SUBJECT: Drawing Requirements

1. PURPOSE. This order transmits changed pages to PBS P 3410.2B.

2. EXPLANATION OF CHANGES.

a. Chap. 5-16 is revised to include data on passenger elevators which are required at the diagrammatic submission.

b. Chaps. 5-20, 6-21, 6-28, and 6-31 are revised to clarify the requirement of not permitting abbreviations of the official title letters on Federal buildings.

c. Chaps. 6-5, 7-3, and appendix A are revised to require the submission of preliminary laboratory equipment layout drawings and project directive-laboratory equipment on GSA Form 123M, at the tentative submission for laboratory buildings. Chap. 6-5 is also revised to include submission of interior perspectives for courtrooms.

d. Chap. 6-16 is revised to change the size of replicas of the Great Seal of the United States, which are furnished by the Government, from 22" and 30", to 24", 36", and 48".

e. Chap. 6-22 is revised to delete reference to design data 28-1-11 and 28-1-12, which have been canceled.

f. Chap. 8-12 and 13 are revised to clarify the requirements for finish and materials schedules, and drawings required to accompany acoustical analysis, which must be submitted with the intermediate working drawings.

Distribution: A-8; B-8 c, d, e, f, g, h; C-8 f, g, h;
D-8 g; F; G-8; H-8 b, c; I-8 b 2, c; PBS-8;
plus figure 1

Attachment

PBS P 3410.2B CHGE 1
May 4, 1965

3. INSTRUCTIONS.

Remove Pages

3 and 5, chap. 5
5, 7, 9, 13, and 19, chap. 6
1, chap. 7
i and ii, 7 and 8, chap. 8
parts 1 and 31, appendix A

Insert Pages

3 and 5, chap. 5
5, 6.1 and 6.2, 7, 9, 13, and 19,
chap. 6
1, chap. 7
i and ii, 7, chap. 8
parts 1, 31, 32.1 and 32.2, appendix A

William A. Schmidt

WILLIAM A. SCHMIDT

Acting Commissioner, Public Buildings Service

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Copies of the HB, Drawing Requirements, are to be forwarded to each regional Design and Construction Division for redistribution in the quantities indicated above. It is intended that a copy of this handbook and subsequent changes be provided to every architect and engineer of PBS engaged in the design and construction program. The remaining copies are to be provided for the use of each Schedules and Services Branch for issuance to contract architects and engineers, as required. Additional copies may be requisitioned in the usual manner.

Figure 1. Supplemental Distribution

12. FUTURE EXTENSIONS. Definitely planned or probable future extensions shall be indicated by dotted outlines on the plans and elevations. The words "Future Extension" should be noted and witness marks, if necessary, should be used to indicate the limits of the extension.
13. TOPOGRAPHIC SURVEY. FBS will attach to each set of diagrammatic sketches a print of the approved topographic survey.
14. MAIN ENTRANCE. When a building has facades on two or more streets, the main entrance can normally be identified by its special architectural emphasis. When the entrances are of equal importance, the one on the principal street shall be considered as the main entrance. If there is no principal street, an arbitrary choice of the main entrance can be made.
15. IDENTIFYING THE FLOORS. The floor approximately on the same level as the main entrance is designated as the "first floor". When a lot slopes downward from the main facade, so that one or more secondary entrances lead to an office level below the first floor, this level is designated as the "ground floor". When a lot slopes upward from the main facade, there is no "ground floor". A secondary public entrance at the rear of the building may be at the second story level, or higher, if the slope is steep.
16. MECHANICAL AND ELECTRICAL.
 - a. Diagrammatic sketches should indicate space for mechanical and electrical equipment, toilet rooms, stacks, wire closets, transformer and switchgear rooms, and the number and location of elevators or escalators. Sewer elevations should be shown. Toilet facility requirements including the number and type of fixtures are described in chapter 3 of the Mechanical and Electrical Engineering Handbook.
 - b. Mechanical and Electrical Data Forms for plumbing, heating, air-conditioning, and electrical should be completed and two copies of each submitted.
 - c. Since the building design and arrangement is so dependent on the types of mechanical and electrical systems selected, it is recommended that the mechanical and electrical engineers be brought into the design at this stage. The economic analyses for mechanical and electrical systems should be at least initiated during the diagrammatic stage since it is imperative that these analyses be approved and the type of systems be selected at the tentative sketches stage, prior to the start of the working drawings.

d. Calculations of the requirements for passenger elevators, for all buildings requiring two or more elevators, should be submitted for review and approval. These calculations should be made in accordance with the provisions of chap. 12 of the Mechanical and Electrical Engineering Handbook and should include a listing of the number, capacity, speed, and platform size of the passenger elevators proposed.

17. SUBMISSION OF BORING LOCATION DRAWING. After the diagrammatic sketches have been approved and the location of the building firmly established, instructions will be sent to the contract architect-engineer concerning preparation of Boring Location drawing 32-1 and other documents required to obtain bids for soil investigation.
18. ROUGH SKETCHES OF DESIGN CONCEPTS. Before diagrammatic sketches are submitted, the Architect-Engineer shall furnish the Office of Design with rough concept sketches (plans and elevations) together with photographs (snap-shots) of the area contiguous to the site. These sketches need not be finished drawings but should present enough information to convey a design concept for the project. The sketches should illustrate the architectural character of the building with emphasis on the following items: unity and harmony with the surrounding area and buildings, regional architecture, proportions, exterior facing materials and structural system. The purpose of these sketches is to explore the various possible solutions to the design problem. The A-E shall indicate his preference from all of the submitted sketches. The Office of Design will review and comment upon each sketch before returning it to the A-E. After a particular sketch has been approved, the A-E shall then proceed with diagrammatic sketches. If the sketches are not satisfactory, he shall submit further studies until agreement is reached.

PART 2. CHECKLISTS

19. PURPOSE. The checklists which follow are intended to aid the architect in avoiding omissions from the diagrammatic sketches; those items which apply must be shown or noted, or both.

20. DIAGRAMMATIC SITE PLAN. (Drawing no. 20-1, appendix B)

Alleys, public and private

Areaways

Compass

Date of Topographic Survey

Dimensions:

Loading platform, front and ends, to opposite limits of paving or trucking area

Overall (building)

Property lines (from survey)

Property lines to building at first story

Elevations or grades

First Floor

Basement Floor

Finished grades:

Adjoining properties

Corners of building

Corners of property

Entrances to building

Entrances to driveways at street

Principal corners of driveways and trucking area

Sanitary and storm sewers opposite property lines

Encroachments

Flagpole, ground

Future Extension to be indicated by dotted outline and note.

Grand Totals of Building Areas:

Name of floor (In column)

Net agency and Custodial area provided on each floor " "

Reserve area provided on each floor " "

Total net assignable area provided on each floor " "

Gross area of each floor

Total of each column

% of Total net area to gross area

Volume of building in cubic feet

Name of contract architect - engineer

Names of streets and avenues

Scale: Noted under title of each drawing on the sheet

Sidewalks

7. FLOOR PLANS. Drawings of floor plans shall have this note:
"Based on Space Directive dated _____".
All rooms and spaces should be indicated individually. When more than one room is assigned to one agency or activity, the total assignment by witness marks outside the building line, should be shown, as on drawings 21-3 through 21-5, appendix C. There should be noted within each room or space, its title - abbreviated when necessary - and directly below the title the finish number as "F-1", "F-17", etc. The area of the room or space is noted at the lower right corner. The schedules of net square feet "Requested" and "Provided", the grand totals of square feet requested and provided, and the "Grand Totals of Areas" should be included just as on the diagrammatic sketches. (Drawings 21-1 to 6, incl., appendix C).
8. DESIGNATION OF P.O. SWING, LOCKER AND TOILET ROOMS. Federal buildings containing space for post office swing, locker and toilet rooms, shall only be designated on floor plans by the following room titles as appropriate:
- "Men's Swing Room"
 - "Men's Locker Room"
 - "Men's Swing and Locker Room"
 - "Men's Toilet" or "Men"
 - "Women's Swing Room"
 - "Women's Locker Room"
 - "Women's Rest Room"
 - "Women's Toilet" or "Women"

When more than one room of the above is required in other locations in the building, they shall be further identified on the floor plans by appropriate room numbers.

9. PARTITION LAYOUT.
- a. General Office Space. In general office space of new Federal buildings, the office partition layouts will be developed on the tentative sketches to insure that the division of space, as required by the Space Directive, can be accomplished. The term general office space means space in buildings where several agencies (other than the Post Office Department, Department of Justice, court facilities or the United States courts) occupy space of such nature as will require a division into small units.

b. Type of Partitions. Corridor partitions may be of the permanent or movable type, full height, but interoffice partitions in general office space shall be of the movable type.

c. Permanent Partitions. Permanent partitions will be indicated by PBS during the review of the tentative sketches. The partitions considered permanent will be marked on a set of tentative sketches for return to the contract architect.

d. Modular Layout. General office partitions shall follow the modular layout of the space. (see Design Data 28-1-40.)

0. NUMBERING OF ELEVATORS. Elevators are numbered as follows:
The numbering starts with the first group of elevators reached from the main entrance, the elevators being numbered in a clockwise direction. The numbering for the other groups of elevators continues clockwise both for the groups and the individual elevators within a group. Elevator numbers are in consecutive order and the numbers are repeated unchanged on each floor plan.
1. NUMBERING OF STAIRS. Stairs are numbered consecutively in a clockwise direction starting with the stairway reached from and to the left of the main entrance.
2. SECTIONS - LONGITUDINAL AND TRANSVERSE. The important rooms should be shown and identified by name (Drawing 21-8, appendix C).
3. ELEVATIONS. Entrance, windows, belt courses, and any special features necessary for estimating, as well as all applicable items on

check list should be indicated. Areaways, windows, and doors below grade are shown in dotted lines. The extent of indicating some jointing is left to the discretion of the Architect. Major materials in general terms such as brick, stone, granite, iron, bronze, aluminum, etc., should be noted either directly on the elevations or in consolidated notes above the title panel in the lower right corner, in order to give the estimator the information available at this stage. (Dwg. No. 21-7, appendix C).

14. CORNERSTONE.

a. Buildings constructed by GSA shall have a cornerstone of granite, limestone, or marble. The inscription shall be in accordance with Standard Detail 6-6-2. Date and names shall coincide with the date the cornerstone is set.

b. Where a building is constructed by GSA with funds appropriated to another agency, additional names, if any, will be determined on a case basis.

15. PLAQUES AND TABLETS. No plaques or tablets are to be provided for the interior of Federal Buildings, **except upon special authorization.**

16. SEALS. Replicas of the obverse and reverse sides of the Great Seal of the United States shall be installed on all new Federal buildings and major extensions or conversions of existing buildings, preferably near the main public entrance. The seals, which are either 24", 36" or 48" in diameter and cast in aluminum, will be furnished by the Government for installation by the construction contractor. (See Standard Detail 6-22-3, for installation.) For buildings constructed by GSA with funds appropriated to another agency additional seals, if any, will be determined on a case basis.

17. FUTURE EXTENSIONS. Probable, or definitely planned future extensions shall be indicated by dotted outlines on the plans and elevations. The words "Future Extension" should be noted and witness marks, if necessary, should be used to indicate the limits of the extension.

18. TOPOGRAPHIC SURVEY. PBS will attach a print of the approved topographic survey as the last sheet of each set of prints of tentative sketches.

19. LINE PERSPECTIVE SKETCH. The contract may require a line perspective sketch. The sketch need not be a finished product, but should present the desired appearance of the building. On some projects a block model of the building may be required in lieu of the perspective sketch.

20. TITLE BLOCKS. These should be filled in with all the data available at the time the sketches are made, including the date (Design Data 28-1-17, 18, 19, 20, 21, 22, 24). Revised drawings shall indicate the date of revision.
21. TITLES OF FEDERAL BUILDINGS.

a. All buildings being constructed either under purchase contract or by funds appropriated directly to GSA, shall have the title "Federal Building." This includes major extensions where one side of the extension becomes the front or main facade.

b. When the title of the building, as shown by Congressional documents, includes United States Post Office, United States Court House, or United States Custom House, the building shall have a secondary title indicating the name or names of these agencies.

c. An example of the building title when one of these agencies is involved is:

FEDERAL BUILDING

UNITED STATES POST OFFICE

d. When more than one of the agencies are occupants, for example, the Post Office and Courts, the title shall be:

FEDERAL BUILDING

UNITED STATES POST OFFICE

UNITED STATES COURT HOUSE

OR

FEDERAL BUILDING

UNITED STATES POST OFFICE AND COURT HOUSE

e. When a postal station is included in a new Federal building the name of the station shall be added to the title such as:

FEDERAL BUILDING

UNITED STATES POST OFFICE

CIVIC CENTER STATION

(or if a secondary entrance)

UNITED STATES POST OFFICE

CIVIC CENTER STATION

f. The street address shall be placed on a new Federal Building in cities where there is an existing Federal Building to remain. The address shall be obtained from the pertinent GSA regional office.

g. Federal buildings in towns with less than 10,000 population shall also have the name of the town, the state, and if a Post Office is included, the "ZIP" code number.

h. Abbreviations in building titles, whether they appear on the interior or exterior, are not permitted.

2. RENDERED PERSPECTIVE. When required by the contract, the contract architect-engineer shall submit a rendered perspective immediately after approval of the tentative sketches. The rendering shall be done by a professional renderer who shall produce an artistic work of high quality. The following requirements shall be observed:

a. Medium. The perspective shall be in colors or monotone, in any medium suitable for photographic reproduction. The environment of the building as it actually exists, or will exist after the building is completed should be portrayed; emphasis however, should be given to the building, not to the details of its surroundings.

b. Scale and Materials Indication. Human figures shall be put at or near the main entrance to establish the scale of the building. The extent to which materials are indicated may be dictated by the esthetic judgment of the architect.

c. Title on Rendered Perspective. On the original perspective there shall be lettered in black ink, at the bottom left corner, the title of the project and name of the contract architect-engineer in capital letters:

FEDERAL BUILDING
UNITED STATES POST OFFICE AND COURT HOUSE, CLAWSON, IOWA
SMITH, BLANK AND SMITH - ARCHITECTS-ENGINEERS

and at the bottom right corner in capital letters:

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C.
or GENERAL SERVICES ADMINISTRATION
REGION _____ CITY _____ STATE _____

if a regional project. The title of the building, and if the population is under 10,000, the name of the city and State shall be indicated in their designated location on the building.

23. EXHIBIT CASES.

a. Exhibit cases for historic documents shall be installed in the lobby of all new Federal buildings and in an extension to an existing building when the design provides a complete public or new post office lobby. Exhibit cases shall be installed in the public area of new U.S. border stations when space permits, (see Standard Detail 6-19-8).

b. The exhibit cases will be furnished by the Government for installation by the contractor.

24. FACILITIES FOR THE PHYSICALLY HANDICAPPED.

a. Access. All new Federal buildings shall provide easy access of wheel chairs to the first floor entrance lobby. Where steps are unavoidable, level access to a secondary entrance, or access by means of a ramp with slope not greater than 1 foot in 12 feet shall be provided.

b. Conveniences. All new buildings over 50,000 square feet in gross area, or smaller buildings if the need dictates, shall be provided with conveniences for persons confined to wheel chairs, as follows:

(1) One toilet stall farthest from the entrance door in one men's public toilet room, preferably on the first floor, shall be provided with a water closet 20" high from floor to top of seat, and with two assist bars on side walls. A similar facility

PART 2. CHECKLISTS

27. COVERAGE. All applicable items on the lists which follow should appear on the tentative sketches.
28. TENTATIVE SITE PLAN. (Drawing no. 21-1, appendix C)
- Alleys, public and private (Note)
 - Areaways
 - Ash hoist (Note)
 - Auto parking
 - Bridges
 - Buildings to be removed (it not shown on survey or demolition plan):
 - By contractor
 - By others
 - Bumpers
 - Coal Hole (Note)
 - Compass
 - Curbs (note new or existing)
 - Date of Topographic Survey
 - Dimensions:
 - Loading platform, front and ends, to opposite limits of paving or trucking area
 - Overall (building)
 - Property lines (from survey)
 - Property lines to building, at first story
 - Property lines to street curbs
 - Width of driveways
 - Width of walks and sidewalks
 - Docks
 - Driveways
 - Elevations (or grades): (Des. Data 28-1-4).
 - Basement floor with single underline (within outline of building)
 - First floor with single underline (within outline of building)
 - Sanitary and storm sewers opposite property lines.
 - Finished grades:
 - All corners of building
 - Catch basins
 - Entrances and exits to building
 - All corners of driveway, trucking areas, and auto parking
 - Corners of property
 - Spot elevations sufficient to show changes of gradient
 - Top and bottom, retaining walls
 - Encroachments

Flagpole, ground (one only, at left of main entrance when facing the building)

Future extension (indicated by dotted outline and by note)

Grand Totals of Building Areas: (Dwg. No. 21-1, appendix C)
same requirements as for diagrammatic site plan.

Gratings, areaway

Landscape:

Architectural planting-enclosures

Lawn areas

Trees retained

Name of contract Architect-Engineer

Names of Streets and Avenues (material to be noted)

Oil Filler Pipe (Note)

Railings (Note only)

Railroad track

Roads

Scale: Note under title of each drawing on the sheet

Sidewalks:

Material (Note)

To be retained (Note)

To be replaced (Note)

Steps:

Area (with direction of run)

Entrance (with direction of run)

Indented

Symbols: (Des. Data 28-1-4)

Buildings entrances

Compass

Titles (official) of buildings (within building outline - no abbreviations)

Trucking area

Tunnels

Walk, to:

Entrances

Flagpoles

Other facilities

Walls, retaining

29. TENTATIVE FLOOR AND ROOF PLANS. (Dwg. No. 21-2, 21-3, 21-4, 21-5, 21-6, 21-7, appendix C).

Abbreviations

Area of Rooms in square feet (within outline of room)

Areaways

Ash hoist (Note)

Titles to be noted:

All spaces (with single underline, Des. Data 28-1-14)
Drawing of Title Block
Name of Contract Architect-Engineer

Toilets: (fixtures and enclosures shown and noted "M" or "W")

Agency
Custodian
Private
Public

Tower, Cooling (show location)

Unassigned Spaces (Noted "Reserved")

Unexcavated Areas (Noted)

Unfinished Spaces (Noted)

Vaults (Des. Data 28-10-2)

Vestibules: (radiators to be indicated)

Employees
Entrance (Des. Data 28-7-4)
Mailing

Windows:

Exterior
Provision for washing
Interior

30. TENTATIVE LONGITUDINAL AND TRANSVERSE SECTIONS.

Columns (if visible)

Dimensions:

Floor to floor and to roofs (including penthouse)

Lookouts:

Clear height inside
Clear height under
Floor height for floor type

Marquees (clear heights and projection) (Des. Data 28-9-28)

Lookouts:

Floor type
Hanging type:
Clear height under
Clear height inside

Platforms:

Loading
Mailing

Post Office (clear heights)

Public Lobby
Work Room

Scale of Drawings

Titles of Principal Rooms

Unexcavated Areas

Unusual foundation conditions disclosed by sections, such as:

Conduits

Fills

Rocks or quicksand

Sewers

Tunnels

Window and Door Openings (in wall sections)

31. TENTATIVE ELEVATIONS.

Areaways (dotted below grade)

Cornerstone (location)

Doors, Public Entrance

Entrance doors and steps (dotted lines below grade)

Flagpole

Future Extension. Indicate by dotted outline and note.

Grades, finished

Heights:

Basement

Each floor

Levels, floor (dash and dot lines)

Marquees (Des. Data 28-9-28)

Materials: (noted in general terms as brick, stone, granite, iron, bronze, aluminum, etc.)

Base courses

Carved or cast features

Roofs (if shown)

Sculptural features

Wall factings

Models (architectural and sculptural) (Des. Data 28-1-5)

Murals (Noted when specifically authorized)

Penthouses

Platforms:

Loading

Mailing

Scale

Railings

Sculptural indication

Stacks

Title of Building (Title to be noted) (If population is less than 10,000, name of city and State is to be given - no abbreviations)

Tower, Cooling

Walls, attached to building

Windows (dotted lines below grade)

CHAPTER 7. PROJECT DIRECTIVE

SCOPE. The project directive gives the financial breakdown of the project and contains essential information about the design, construction, materials, finishes, and equipment.

FORMS. Certain forms are provided for use in preparing the project directive. The following forms, GSA 123a to 123k inclusive, are to be used for new buildings, extensions, or extension and remodeling projects:

	<u>GSA Form</u>
EST Project Directive Budget (Contract Architects)	123a
EST Project Directive Budget (for office use)	123b
EST Project Directive Estimate (General Contract)	123c
EST Project Directive - Reservations	123d
A Project Directive - Site Development	123e
A Project Directive - Exterior Materials	123f
A Project Directive - Interior Materials	123g
A Project Directive - Interior Finishes	123h
S Project Directive - Structural	123i
ME Project Directive - Mechanical and Electrical (sheets 1 & 2)	123j
DS Project Directive - Fire Safety	123k
L Project Directive - Laboratory Equipment (to be filled out only for Laboratory Buildings)	123M

SYMBOLS. The symbols in the upper right corner of these forms refer to the following:

A - Architectural
DS - Fire Safety
EST - Estimates

L - Laboratory Equipment

ME - Mechanical - Electrical

S - Structural

4. SPECIMENS. Copies of the project directive forms listed above are included in appendix A. For clarity, some of the forms have been filled in with typical entries for the imaginary building "Clawson, Iowa."
5. FILLING OUT THE DIRECTIVE. As various items and materials are determined upon during the preparation of the tentative sketches, corresponding notations are made on the project directive forms. The completed project directive, including a tentative estimate of cost, must be submitted with the tentative sketches.
6. PROJECT DIRECTIVE FOR REMODELING. The following forms, which are also included herein, are intended for regional use on remodeling projects only:

GSA Form

EST Remodeling - Project Directive, Budget Estimate	1647A
EST Remodeling - Project Directive, Estimate (General Contract)	1647B
DS Remodeling - Project Directive, Interior Materials	1647C
DS Remodeling - Project Directive, Miscellaneous	1647D
ME Remodeling - Project Directive, Mechanical	1647E

7. CHANGE IN PROJECT DIRECTIVE. Changes in the approved project directive, if found necessary at any stage, must be submitted on GSA Form 124 for approval before they can be incorporated in the drawings. This form may be used for any type project.

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not be completely detailed except where the degree of completeness is defined as in "Wall Sections" since labor is wasted if the drawings prove to be unacceptable. They must, however, be complete enough to permit a detailed estimate of cost.

12. SCHEDULES. Chap. 9-27 thru 29 contains a list of schedules required for the final working drawing submission and instructions for filling the schedules out. Of the schedules listed, the following are required to be filled out at the intermediate working drawing stage:
- a. Interior Finish Schedule. This shall be filled out on the schedule sheet, drawing 5-1, which PBS furnishes to contract architect-engineers, based on the finishes which are specified in the approved project directive.
 - b. Glass Schedule. This shall be filled out in strict accordance with design data 28-30-13. It may, however, be submitted on a separate sheet of paper at the intermediate stage, but shall be incorporated on the schedule sheet, drawing 5-1, when final working drawings are submitted.
 - c. Interior and Exterior Materials Schedules. The following portions of the interior and exterior materials schedule, where the applicable materials are specified in the approved project directive, shall be filled out in strict accordance with the referenced design data sheets. They may be submitted on separate sheets of paper, as in b, above:
 - (1) Acoustical (Prefabricated Units), des. data 28-30-1.
 - (2) Architectural Metals, des. data 28-30-23.
 - d. Notes on Elevations. The exterior elevations and the interior elevations, where interior elevations are required, shall include notes to indicate materials which are specified in the approved project directive.
13. ACOUSTICAL ANALYSIS. Where a building contains special assembly rooms such as courtrooms and auditoriums, an acoustical analysis of such space shall be submitted no later than the intermediate working drawings. All interior elevations, profile sections, and a reflected ceiling plan of these spaces, in which all materials are noted, are required at this stage.

May 4, 1965

14. INTERMEDIATE WORKING DRAWING PRINTS. Unless otherwise required by the contract, one set of sepia reproducibles is required of the contract architect-engineer for Central Office projects. The kind of prints and the number of sets required for regional projects will be determined by the region.
15. ESTIMATE OF COST. With this submission an updated estimate of cost is required. This should comprise GSA forms 123a, 123c and 123d, of the project directive, submitted in triplicate. Reservations to be carried should be shown and also any adjustment of the cost estimate previously submitted with the tentative sketches.
16. SPECIFICATIONS. At this stage the contract architect-engineer shall submit one copy of a rough draft of the specification. The guide specifications previously furnished shall be edited and tailored to the project by deletions or additions. Fly-leaves for material and workmanship proposed for insertion shall be clipped in the appropriate sections. PBS will review the specification and comment on, or point out, irregularities which are inconsistent with Government policies. The reviewed copy will be returned to the contract architect-engineer for completion. This will form the basis for formulation of the final typed specifications.

Form No.

Title

GSA 261	Space Directive (General) (10 Sheets)
PBS 143	Space Directive Change
GSA 123L	EST Project Directive Budget (Budget)
GSA 123b	EST Project Directive Budget (for office use)
GSA 123c	EST Project Directive Estimate (General Contract)
GSA 123c (Con.)	EST Project Directive Estimate (General Contract)
GSA 123D	EST Project Directive Reservations
GSA 123E	A Project Directive Site Development
GSA 123F	A Project Directive Exterior Materials
GSA 123G	A Project Directive Interior Materials
GSA 123H	A Project Directive Interior Finishes (7 Sheets)
GSA 123I	S Project Directive Structural
GSA 123J	ME Project Directive Mechanical and Electrical (Sheets 1 & 2)
GSA 123K	DS Project Directive Fire Safety
GSA 123M	L Project Directive Laboratory Equipment
GSA 1647A	EST Remodeling Project Directive Budget Estimate
GSA 1647B	EST Remodeling Project Directive Estimate (General Contract)
GSA 1647C	DS Remodeling Project Directive Interior Materials
GSA 1647D	DS Remodeling Project Directive Miscellaneous
GSA 1647E	ME Remodeling Project Directive Mechanical
GSA 124	Change in Approved Project Directive
- -	Model Schedule (Architectural
- -	Model Schedule (Sculptural)
PB-13	Request for Contract Change (CCC)

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D. C.

PROJECT DIRECTIVE
FIRE SAFETY
SHEET 17 OF 17 SHEETS

DS

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001
STREET Greene Avenue & White St. CITY Clawson, STATE Iowa
TYPE OF CONSTRUCTION (FIREPROOF, INCOMBUSTIBLE, MASONRY WALL & WOOD, WOOD, GIVE
GENERAL FIRE RESISTANCE RATING.) FIRE RESISTIVE (2 Hour)
OCCUPANCY 186 (Incomplete)
POPULATION BY FLOORS Bsm't. - 32, 1st - 89, 2nd - 44, 3rd - 22.
COMBUSTIBLE CONTENTS (NATURE, AMOUNT, LOCATION) Mail, wood furniture, carpet, paper
LOCATION AND CONSTRUCTION OF
PROJECTION BOOTHS None
FILM STORAGE None
TRASH ROOMS Concrete Basement
TRANSFORMER VAULTS Concrete Basement
CONSTRUCTION OF
CORRIDOR DOORS Wood
STAIRWAY DOORS Hollow Metal
FIRE DOORS Hollow Metal
FIRE WALLS Brick 12 inches or Concrete 8 inches.
FIRE SHUTTERS None
PARTITIONS Gypsum board on metal studs. Corridors, toilets & other permanent
ARRANGEMENT OF partitions masonry.
EXIT LIGHTING At Stair Entrances and Building Exits.
CORRIDOR LIGHTING Portion on Emergency Circuit
FIRE ALARM Manual type in general. Automatic in local hazardous areas
LOCATION OF
SPRINKLERS Located in Trash Room and Carpenter Shop
STANDPIPE & HOSE (GIVE SIZES OF BOTH)
FIXED, AUTOMATIC EXTINGUISHERS None
PORTABLE EXTINGUISHERS (TYPE & NUMBER) 12-Soda-Acid Extinguishers in contract.
WATER SOURCE & PRESSURE IN PSI (FOR HOSE) City at 90 p.s.i.
NOTES:

APPROVED, SUBJECT TO FOLLOWING COMMENTS:

CHAIRMAN, OFFICE COMMITTEE ON FIRE SAFETY

DATE 19

GSA FORM MAY 61 123K

GENERAL SERVICES ADMINISTRATION - PUBLIC BUILDINGS SERVICE		SHEET
PROJECT DIRECTIVE - LABORATORY EQUIPMENT		OF SHEETS
PROJECT TITLE		L
		PROJECT NO.
MATERIALS		
LABORATORY FURNITURE	☐ METAL	☐ WOOD
TOPS (See reverse)	☐ CLASS I	☐ CLASS II ☐ CLASS III
SINKS AND TROUGHS	☐ LEAD ☐ STONE ☐ PLASTIC ☐ STAINLESS STEEL	
	☐ OTHER (Specify)	
CUP SINKS	☐ LEAD ☐ GLASS ☐ OTHER (Specify)	
FUME HOODS	☐ OPEN FACE ☐ CLOSED FACE ☐ STANDARD ☐ SPECIAL	
LINING AND WORKSURFACE	☐ STONE ☐ ASBESTOS ☐ STAINLESS STEEL	
	☐ OTHER (Specify)	
VENTILATION	☐ EXHAUST _____ cfm ☐ SUPPLY _____ cfm	
SERVICE FITTINGS AND REQUIREMENTS		
WATER	☐ HOT _____ F (or C) ☐ COLD ☐ DISTILLED ☐ DEIONIZED	
	☐ CHILLED _____ F (or C) ☐ DEMINERALIZED	
	☐ OTHER (Specify)	
OTHER SERVICES	☐ GAS ☐ AIR _____ PSI ☐ VACUUM _____ IN. HG. ☐ STEAM _____ PSI	
ELECTRICAL OUTLETS	☐ TYPE _____ VOLTAGE	
CONTROLLED ENVIRONMENT SPACE		
CONSTRUCTION		
	☐ PREFABRICATED ☐ BUILT-IN	
COLD ROOMS	☐ TEMPERATURE _____ TO _____ F (or C) ☐ SENSITIVITY $\pm$ _____ F (or C)	
	☐ UNIFORMITY $\pm$ _____ F (or C) ☐ HUMIDITY _____ TO _____ % $\pm$ _____ % R.H.	
HOT ROOMS	☐ TEMPERATURE _____ TO _____ F (or C) ☐ SENSITIVITY $\pm$ _____ F (or C)	
	☐ UNIFORMITY $\pm$ _____ F (or C) ☐ HUMIDITY _____ TO _____ % $\pm$ _____ % R.H.	
CLEAN ROOMS (FED. STD. 209)	☐ REQUIREMENTS:	
SPECIAL EQUIPMENT (FIXED) INSTALLED BY CONTRACTOR		FURNISHED BY
STERILIZERS	☐ (Describe)	CONTRACTOR OTHER
AIR COMPRESSOR	☐ _____ cfm _____ PSI	
VACUUM PUMP	☐ _____ cfm _____ IN. HG.	
WATER TREATMENT	☐ (Describe)	
STILLS	☐ _____ gpm	
DISTILLED WATER TANKS	☐ _____ gals; MATERIAL	
OTHER TANKS	☐ _____ gals; MATERIAL	
Ovens	☐ (Describe)	
REFRIGERATORS	☐ _____ Cu. Ft.	
FREEZERS	☐ _____ Cu. Ft.	
OTHER	☐ (Describe)	
REMARKS		

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

REMODELING
PROJECT DIRECTIVE
BUDGET ESTIMATE

EST

REGION _____

SHEET 1 OF _____ SHEETS

PROJECT TITLE _____

PROJECT NO. _____

STREET _____

CITY _____

STATE _____

NATURE OF REMODELING _____

CONTRACT ARCHITECT-ENGINEER _____

STREET _____

CITY _____

STATE _____

(BASED ON TENTATIVE SKETCHES DATED _____ 19__)

DESCRIPTIVE DATA

GROSS FLOOR AREA _____ SQ. FT.

NET FLOOR AREA _____ SQ. FT.

NUMBER OF FLOORS _____

GROSS AREA REMODELED _____ SQ. FT.

FINANCIAL STATEMENT

GENERAL CONTRACT. _____ \$ _____

RESERVATIONS: (Items not in general contract)

COMMUNICATION SYSTEM\$ _____

DIRECTIONAL SIGNS _____

ELECTRIC LAMPS _____

ELEVATOR WORK _____

EQUIPMENT, LABORATORY AND MISCELLANEOUS _____

PROJECTION AND SOUND SYSTEMS _____

TELEPHONE INSTALLATION _____

TITLE CARD HOLDERS _____

UTILITY CHANGES _____

VENETIAN BLINDS _____

DUPLICATION _____

CONTINGENCIES _____

REQUIRED FOR CONSTRUCTION _____

AVAILABLE FOR CONSTRUCTION _____

SURPLUS OR DEFICIT _____

COST PER GROSS SQ. FT. _____

ALTERNATES:

NOTES:

CONTRACT ARCHITECT-ENGINEER _____

BY _____

APPROVED BY DIRECTIVE BOARD

PLAN. DIV. _____

BM-SPACE _____

BM-R&I _____

EST _____

CHAIRMAN _____

DATE _____

GENERAL SERVICES ADMINISTRATION

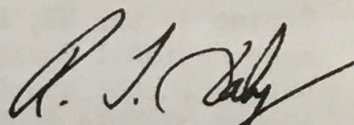
WASHINGTON, D. C. 20405

PBS P 3410.2B
August 7, 1964

GSA ORDER

SUBJECT: Drawing Requirements

1. PURPOSE. This order issues and transmits a complete revision of the GSA handbook entitled "Drawing Requirements."
2. CANCELLATION. PBS P 3410.2A and CHGE 1 are canceled.
3. APPLICABILITY. This handbook contains specialized and technical data for the guidance of (a) architects and engineers of the Public Buildings Service and (b) contract architects and engineers engaged in design, construction, and alteration for the Public Buildings Service.



R. T. DALY
Commissioner, Public Buildings Service

LOCATION OF ATTACHMENT. The attachment to this order has been removed and is being held by _____
(Insert full title.)

at _____
(Insert full organization, address, and telephone number.)

Distribution: A-8; B-8 c, d, e, f, g, h; C-8 f, g, h;
D-8 g; F; G-8; H-8 b, c; I-8 b 2, c; PBS-8;
plus figure 1

Attachment

SUPPLEMENTAL DISTRIBUTION

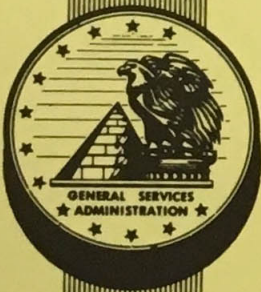
<u>Office</u>	<u>Copies</u>	<u>Office</u>	<u>Copies</u>
PCD:	140	Region 5:	110
PCDD:	150	Region 6:	60
Region 1:	50	Region 7:	85
Region 2:	100	Region 8:	40
Region 3:	250	Region 9:	70
Region 4:	75	Region 10:	40

Copies of the HB, Drawing Requirements, are to be forwarded to each regional Design and Construction Division for redistribution in the quantities indicated above. It is intended that a copy of this handbook and subsequent changes be provided to every architect and engineer of PBS engaged in the design and construction program. The remaining copies are to be provided for the use of each Schedules and Services Branch for issuance to contract architects and engineers, as required. Additional copies may be requisitioned in the usual manner.

Figure 1. Supplemental Distribution

PBS P 3410.2B
August 7, 1964

DRAWING REQUIREMENTS



A GSA HANDBOOK

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C.

DRAWING REQUIREMENTS

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DRAWING REQUIREMENTS

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CHAPTER 1. PURPOSE AND USE

1. APPLICABILITY. This handbook is for the guidance of architects and engineers who have entered into a contract with the Public Buildings Service to design a building or an extension; also for the information of architectural and engineering personnel in the Central Office and regional offices of the General Services Administration. Although the handbook is directed primarily to new construction, it contains much information applicable to remodeling projects as well.

2. SCOPE.

a. The method of preparing the various classes of drawings and related documents required for the design of a Federal building is prescribed in this handbook. Checklists of items which must be included, if applicable, are also given. Each class of drawing is described in the order of its production. The final chapter of this handbook contains a glossary of those terms which have a special Public Buildings Service meaning. The glossary is followed by appendixes of sample forms and sample drawings mentioned in the text.

b. The drawings contained herein are intended as examples of what the plans, elevations, etc., must show at the various stages of submission. They are not intended as examples of current planning or design, and should not be followed as design criteria.

3. HANDBOOK NUMBERING SYSTEM:

a. This handbook is divided into chapters, parts, paragraphs, and subparagraphs. Paragraphs are consecutively numbered within each chapter. Subparagraphs are marked with a small letter of the alphabet. Further subdivisions are marked with an Arabic numeral in parentheses.

b. Pages are coded at the top with a PBS symbol number and date. They are identified at the bottom with the chapter and paragraph beginning the text on the page and abbreviated in capital letters as CHAP _____ over PAR _____. Pages are also consecutively numbered within each chapter.

c. Citations to material will be in the following form:

A total chapter: chap. 2

August 7, 1964

A specific paragraph: chap. 2-16

A specific subparagraph: chap. 2-16a

Several consecutive paragraphs: chap. 2-16 through 21

d. Revised or added pages will be identified by a new date in the upper right or left corner, immediately below the PBS symbol number. This date will be the same as the covering order prescribing the change.

4. METHODS OF ISSUANCE. Handbook material is issued in looseleaf form to permit the insertion or removal of pages upon which additions, deletions, or revisions may be made. Revised or added pages are issued as required and the handbooks affected should be kept current by all to whom they are issued. The GSA orders transmitting additional material should be retained in the particular handbook.
5. GSA HANDBOOKS. The following GSA handbooks are concerned with the planning, design and construction of Federal buildings:
 - a. INSTRUCTIONS TO CONTRACT ARCHITECTS AND ENGINEERS (PBS P 3410.1)
 - b. DRAWING REQUIREMENTS (PBS P 3410.2B)
 - c. MECHANICAL AND ELECTRICAL ENGINEERING (PBS P 3460.1A)
 - d. STRUCTURAL ENGINEERING (PBS P 3475.1)
 - e. UNITED STATES COURTS (PBS P 3425.1)
 - f. DESIGN ADMINISTRATION (PBS P 3425.3)
 - g. CONSTRUCTION ADMINISTRATION (PBS P 3415.3)
 - h. BUILDING CONSTRUCTION COST ESTIMATING (PBS P 3440.1)
 - i. A "package" of those handbooks relevant to a particular type of Federal building will be furnished to the contract architect-engineer.
6. STANDARD DETAILS AND DESIGN DATA.
 - a. The Standard Details are printed on white paper, suitable for binding in the contract specifications. The Design Data drawings, which are printed on yellow paper, are for guidance only and do not

August 7, 1964

become part of the contract drawings and specifications. They are not to be used as Standard Details; nor should they be scaled for size of rooms or other spaces. Each Standard Detail and Design Data drawing is identified by a basic number; e.g.,

	STD. DET		DES. DATA
ARCHITECTURAL	6-1-1	AND	28-1-1
STRUCTURAL	8-1-1	AND	29-1-1
MECHANICAL-ELECTRICAL	10-1-1	AND	30-1-1

b. If a Standard Detail, or Design Data sheet is revised, an alphabetical suffix is added to the last figure of the basic number; e.g.,

6-1-1A. A further revision is designated 6-1-1B which then supersedes drawing 6-1-1A.

c. All references to Standard Detail and Design Data drawings in all the handbooks mentioned are to the basic number only.

d. Where Standard Details or Design Data drawings are used or referred to it is mandatory that the last revision of these drawings be used. To determine the latest revision, the album of Standard Details and Design Data should be consulted.

e. The Standard Detail and Design Data albums are to be kept up to date by the immediate substitution of revisions or additions as they are received. Revised and new Standard Details and Design Data drawings will be sent to contract architect-engineers up to the submission of the completed working drawings.

f. The architect-engineer should always consult the albums for applicable Standard Details or Design Data before starting a drawing or detail of his own.

g. Numerical and alphabetical indexes of Standard Details and Design Data are brought up to date from time to time but are not reissued every time a Standard Detail or Design Data is revised, canceled or issued.

7. ABBREVIATIONS. The following abbreviations are used in this handbook:

GSA	General Services Administration
PBS	Public Buildings Service

CO Central Office, PBS
OD&C Office of Design and Construction, Central Office
RO Regional Office, PBS
D&C Div. Design and Construction Division, Regional Office

8. UNIFORM DRAFTING REQUIREMENTS. In the interest of uniformity and to facilitate reviewing contract architect-engineer drawings, the requirements for preparing drawings, etc., as stated in this handbook, are to be followed for all drawings, including structural, mechanical, and electrical. If some special condition seems to make it impractical or impossible to conform to any one of these requirements, the problem should be referred to the Office of Design and Construction, if a Central Office project, or to the Chief, Design and Construction Division, if a regional project.
9. PRINTS FOR REVIEW.
- a. For Central Office projects, a single set of sepia reproducibles is generally required for each submission of contract architect-engineer drawings. Black and white prints of these sepias are made by OD&C and are used by reviewing personnel for notation of comments. All comments are coordinated on the sepia reproducibles, which are returned to the contract architect-engineer. A print of the noted sepias are kept by OD&C for record.
- b. Regional Design and Construction Divisions may develop their own requirements for prints for review.
10. IDENTIFYING REVIEW NOTES.
- a. For ease in identifying the notes by the various branches of OD&C, the following colors have been assigned for marking the sepias:
- ARCHITECTURAL BRANCH:
 Diagrammatic and Tentative SketchesOrange Pencil
 Intermediate and Final DrawingsGreen Pencil
STRUCTURAL BRANCHBlue Pencil
- MECHANICAL-ELECTRICAL BRANCHDeep Red Pencil
- SPECIFICATIONS BRANCHPurple Pencil

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- b. Comments from client agencies should be marked in brown pencil on the sepias.
- c. Regional Design and Construction Divisions may develop their own color code for marking prints.

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CHAPTER 2. DRAFTING STANDARDS

1. STANDARD SHEET SIZE.

- a. Three standard sheet sizes are used for drawings: 24" x 18", 36" x 24", and 42" x 30". Diagrammatic Sketches shall be drawn on 24" x 18" sheets. Either 24" x 18" or 36" x 24" sheets shall be used for Tentative Sketches. Either 36" x 24" or 42" x 30" sheets shall be used for Working drawings.
- b. Sheets other than the standard size may be used only upon written approval of the Director, Design Division, CO, or the Chief, Design and Construction Division, RO. Sheet sizes shall be in multiples of six inches and in no case shall the sheet size exceed 48" x 36".
- c. All drawings in the same category must be uniform in size.
- d. Design Data 28-1-2 indicates the sizes and border arrangements.

2. ARCHITECTURAL DRAFTING SYMBOLS.

- a. Illustrative drawings in the Design Data and Standard Detail albums show:

	<u>Des. Data Dwg. No.</u>
Architectural Drafting Symbols and Method of Identifying Details	28-1-4
Architectural Drafting Symbols - Furniture	28-1-7
Door Symbols, Model Symbols and Methods of Dimensioning	28-1-5
Architectural Drafting Symbols - Plumbing Fixtures	28-1-6
	<u>Std. Detail Dwg. No.</u>
Material Symbols	6-1-1

- b. Abbreviations Used on Drawings. See Standard Detail 6-1-2.
- c. Standard Lettering for Drawings. The type of lettering desired on drawings is shown on Design Data drawings 28-1-1 and 28-1-14.

- d. "Composite" Floors. Floors that have a change in level (such as a floor with a mezzanine) should not be shown as a "composite" floor plan. Separate plans for the different floor levels are required.
- e. Identical Floors. Identical floors, except for mechanical and electrical, may be shown on a single plan, with explanatory notes. (See also chap. 2-3 of the Mechanical and Electrical Engineering Handbook.)
3. SCALE. The various scales acceptable to PBS, ranging from 1/32" to full size, are specified in the chapters relating to each progressive state of drawing preparation. The 3/32" = 1' -0" scale shall not be used for any drawing.
4. PLACEMENT OF DRAWINGS, TITLES, AND SCALES.
 - a. In general, there should be placed on each subject sheet as many plans, elevations, sections, details, or data as possible without crowding or impairing clarity of delineation. The site plan and all floor plans of a building sometimes can be shown on a single sheet. The site plan should be on the first sheet near the title block.
 - b. When there are several drawings on one sheet, the title of each drawing is placed directly below it, in capital letters, underlined. Below the title, centered, is noted the scale of the drawing.
5. FILLING IN THE TITLE BLOCK.
 - a. Filling in the Data. The method for filling in the title block is illustrated on Design Data drawings 28-1-17 through 28-1-24. These illustrations are largely self-explanatory.
 - b. Approval of Drawings. The title block for Central Office projects provides spaces for approvals by the several branches of the Design Division, Office of Design and Construction. The title block shall be similar for contract changes, surveys, etc. On regional projects the title block provides for regional Design and Construction Division approvals. See Design Data 28-1-17 through 28-1-24.
 - c. Contract Architect-Engineer's Name. On drawings prepared by a contract architect engineer, a space the width of the block and height as necessary, is added directly above the block, within which to letter the name and title of the contract architect-engineer. The name shall be 1/8" high; the title 3/32" high; the space between the lines shall

be 3/32". Design Data drawing 28-1-22.) The contract architect-engineer shall leave blank the space marked "File No."; this is for PBS office use.

d. Sizes of Lettering. The sizes of lettering for the various spaces of the title block shall be as shown on Design Data drawings 28-1-17, 18, etc.

e. SPACE FOR DRAWING TITLE. In this space, the title of the particular drawing is lettered, as "First Floor Plan", "Roof & Penthouse Plan", "Plans" (if there are several on a sheet), etc. In the space below, the general classification of drawing is inserted, as "Diagrammatic Sketches", "Tentative Sketches", "Structural", "Plumbing-Heating", etc. Abbreviations are permissible when necessary.

f. Title Block for Shop Drawings. Final approved shop drawings are rubber-stamped with a blank title block, which is then filled in and the serial number of the drawing is assigned.

6. INDICATING DIMENSIONS - FLOOR PLANS.

a. Application of Method. Since drawings are infinite in variety, it is not practicable to lay down inflexible rules for dimensioning that will fit all cases. Exceptional problems must be solved by the good judgment of the draftsman. In general, if the plans are so large that they have to be drawn at small scale, such as 1/32" or 1/16", and become largely diagrammatic, then some parts of the plans must be drawn at larger scale. In that case, only general guide dimensions need be shown on the smaller scale plans.

b. Sequence of Dimensional Lines. (Design Data 28-1-8). The exterior dimension lines on all floor plans shall be shown in the following order, beginning with the line farthest from the building (1) and proceeding to the line nearest the building (4):

- (1). "Overall" dimension;
- (2). "Break" dimension (if required);
- (3). "Column Center" dimension (if required);
- (4). "Opening and Pier" dimensions (if required), tied to exterior column center dimensions.

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c. Spacing of Lines. For clarity the line nearest the building (usually the "Opening and Pier" dimensions), where possible, shall be 3/4" from the greatest projection (such as well breaks, steps, areaways, etc.). The spaces between dimension lines shall be 1/4".

d. Re-Entrant Angles. Dimension lines at exterior walls within re-entrant angles shall be so placed that the dimension lines at right angles to each other will not interfere with other dimension lines or projections.

e. Column Centers. Interior column center dimensions shall be placed within the floor plan and shall show clearly the dimensions of the interior column centers from exterior wall lines, from offset column locations, etc.

f. Partitions. Partitions and interior walls shall be tied to column center lines, or to exterior wall lines, or to both. On plans of sufficiently large scale to permit it, the interior masonry partitions shall be dimensioned to the faces of the masonry and interior frame partitions to the center. In all cases, the dimension lines shall be tied to the exterior masonry wall face or the exterior frame studding face.

7. INDICATING DIMENSIONS - ELEVATIONS.

a. Story Heights. Each elevation shall have a dimension line indicating story heights, drawn at the left of the elevation and 3/4" from extreme wall projections whenever margin space permits.

b. Windows. On working drawings, each different type of window opening shall have continuous height dimension lines for each story, indicating:

(1). Height from finish floor to top of masonry or metal sill (not sub-sill).

(2). Height from top of masonry or metal sill (not sub-sill) to bottom of masonry head or lintel (clear opening), thence to finish floor above or to roof slab or plate line.

c. Other Openings. Other openings or special features shall have dimensions clearly indicated on the general drawings or details or both.

8. MODULAR COORDINATION. The dimensioning method in accordance with the Modular Building Standards Association practice may be used at the option of the contract architect-engineer.
9. DELINEATING REPAIR AND IMPROVEMENT WORK. The following method of delineation should be used for R&I projects:
 - a. Present work to remain should be shown in outline.
 - b. Present work to be removed is to be indicated by dotted lines.
 - c. All new work should be shown hatched or solid.
10. REGISTRATION STAMP. The contract architect-engineer and his professional subcontractors shall place their registration stamps and signatures on the contract drawings. The Architect shall stamp and sign the first sheet of architectural drawings (Index sheet). The various responsible Engineers shall stamp and sign the first sheets of their respective drawings.

CHAPTER 3.
NUMBERING
THE DRAWINGS

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CHAPTER 3. NUMBERING THE DRAWINGS

1. SYSTEM OF NUMBERING. For meaning of titles that are not self-explanatory, see "Drawings" in the glossary, chap. 15, below. The numbers represented by the parentheses in the "Number" column, below, are explained in the paragraphs that follow the tabulation.

<u>Title</u>	<u>Number</u>
Cover Sheet with Index	0 - 1
Surveys, Borings	1 - 1,2, etc.
Site Plans, Grading, Demolition	2 - 1,2, etc.
Architectural Floor Plans	3 - 1,2, etc.
Architectural Elevations and Transverse and Longitudinal Sections	4 - 1,2, etc.
Architectural Schedules and Scale Details	5 - 1,2, etc.
Architectural Standard Details	6-()-1,2, etc.
Structural Drawings, Scale Details, and Schedules (see par. 2, below)	
Structural Standard Details	8-()-1,2, etc.
Mechanical Drawings (see par. 3, below)	9- 1,2, etc.
Mechanical Standard Details	10 -()-1,2, etc.
Contract Change Drawings prepared by the Central Office:	
Architectural Change Drawings.	11-1, 2, etc.
Structural Change Drawings.	12-1, 2, etc.
Mechanical & Electrical Change Drawings.	13-1, 2, etc.
Contract Change Drawings prepared by the Architect-Engineer:	
Architectural Change Drawings.	11-100, 101, etc.
Structural Change Drawings	12-100, 101, etc.
Mechanical & Electrical Change Drawings.	13-100, etc.

Assignment Plans	14 - 1,2, etc.
(include the total, e.g., 14-1 of 8, 14-2 of 8, etc.)	
Construction Sequence.	.16 - 1,2, etc.
Landscaping.	.17 - 1,2, etc.
Diagrammatic Sketches.	.20 - 1,2, etc.
Tentative Sketches	.21 - 1,2, etc.
Encroachments and Easements.	.22 - 1,2, etc.
Architectural Full-Size Details.	.23 - 1,2, etc.
Architectural Shop Drawings.	.24 - 1,2, etc.
Structural Shop Drawings	.25 - 1,2, etc.
Mechanical Shop Drawings	.26 - 1,2, etc.
Drawings prepared by Regional Offices.	.27 - 1,2, etc.
Minor contract change or partition layout drawings prepared by Regional Offices or Construction Engineers:	
Architectural Change Drawings.	.27-11-1, 2, etc.
Structural Change Drawings	.27-12-1, 2, etc.
Mechanical & Electrical Change Drawings.	.27-13-1, 2, etc.
Contract Change Drawings prepared by the Architect-Engineer on Regional Office repair and improvement projects:	
Architectural Change Drawings.	.27-11-100, 101, etc.
Structural Change Drawings	.27-12-100, 101, etc.
Mechanical & Electrical Change Drawings.	.27-13-100, 101, etc.
Design Data (Architectural).	.28-()-1, 2, etc.
Design Data (Structural)	.29-()-1, 2, etc.
Design Data (Mechanical)	.30-()-1, 2, etc.
Miscellaneous Architectural.	.31-()-1, 2, etc.
Miscellaneous Structural	.32-()-1, 2, etc.

Miscellaneous Mechanical.	33 - 1, 2, etc.
Amendment	34 - 1, 2, etc.
Supplementary	35 - 1, 2, etc.
Furniture	36 - 1, 2, etc.
Equipment	36 - EQ - 1,2, etc.
Room Assignment Schedules (Furniture)	36-S-1, 2, etc.
Draperies & Casement Curtains	36-C-1, 2, etc.
Furniture Layout	36-L-1, 2, etc.
Special Furniture	36-SF-1, 2, etc.
Painting and Decoration	36-PG-1, 2, etc.
Furniture Shop Drawings	37 - 1, 2, etc.
Architectural Information	43 - 1, 2, etc.
Structural Information	44 - 1, 2, etc.
Mechanical-Electrical Information	45 - 1, 2, etc.
Partition Layout Drawings (To be furnished contractor)	46 - 1, 2, etc.

2. STRUCTURAL DRAWINGS. If a large number of drawings is required for one project, the structural drawings should be numbered in groups, assigning one number to each group after the basic symbol 7. For example: Series 7-1-1, 2, 3, etc., for foundations; 7-2-1, 2, 3, etc., for basement plans; 7-3-1, 2, 3, etc., for the first floor plans and so on through the structure.

3. MECHANICAL-ELECTRICAL.

a. The mechanical-electrical drawings are to be numbered in groups, assigning a letter to each group after the basic symbol 9. For example:

<u>Title</u>	<u>Number</u>
Outside Services	9-OS-1, 2, 3, etc.
Plumbing, Sprinklers, Vacuum Cleaning Systems, and Gas Piping	9-P-1, 2, 3, etc.
Heating	9-H-1, 2, 3, etc.
Ventilating	9-V-1, 2, 3, etc.
Airconditioning	9-AC-1, 2, 3, etc.
Electrical, Conduit and Wiring, Underfloor Duct, Communication and Signal Systems and Lighting Fixtures	9-E-1, 2, 3, etc.
Other Mechanical Equipment	9-M-1, 2, 3, etc.

b. If several groups are included on one drawing, the distinguishing letters may be combined. For example: A drawing marked 9-PHE-1 would show Plumbing, Heating and Electrical work. Each combination of letters should begin a new series starting with number 1.

4. STANDARD DETAILS. The Standard Details prepared in PBS by the Design Division, OD & C, have the following basic symbols:

- 6 Architectural
- 8 Structural
- 10 Mechanical and Electrical

These three groups are further broken down into numbered classifications, such as the Architectural Standard Details applying to site work (2), U.S. Courts (24), etc. The various Architectural Standard Details for the U.S. Courts, for example, are identified by the basic symbol (6), the classification (24), and the serial number of the drawing, as "6-24-1", "6-24-2", etc. If a Standard Detail is revised, the capital letter "A" is added to the drawing number for the first revision, "B" for the second revision, and so on.

5. DESIGN DATA DRAWINGS. The Design Data drawings have the basic symbol 28 for architectural, 29 for structural and 30 for mechanical and electrical. Each of these three groups may be further broken down into classification, indicated by an intermediate number set off by dashes from the basic symbol and from the serial number of the drawing, in the same manner as Standard Details. Revisions are indicated by the

addition of a capital letter at the end of the drawing number, as with Standard Details (see par. 4, above).

6. DRAWINGS FROM REGIONAL OFFICES. Drawings prepared in the regional offices of PBS shall use the symbol 27. If any one of these drawings is replaced by a revised drawing, the original number shall be used, followed by "A" for the first revision, "B" for the second revision, etc. (See Design Data drawing no. 28-1-24.)
7. EXTENSION AND REMODELING. Drawings for the extension and remodeling of a building shall be numbered as if the project were a new building; however, the words "extension and remodeling", which may be abbreviated to "Ext. & Rem.", shall be included in the title. Further extensions shall be indicated as "Ext. & Rem. 2", "Ext. & Rem. 3", etc.
8. MULTIPLE BUILDING PROJECTS. If there are several buildings on a site, the drawing applying to each building shall be numbered as though the buildings were on different sites. The title of the drawing shall be followed by the building number, abbreviated thus: (Bldg. 1), (Bldg. 2), etc. This does not apply to projects such as border stations or Department of Agriculture laboratory facilities which contain a large main building with one or more small auxiliary buildings on the site.
9. PLANS REQUIRING SEVERAL SHEETS. Where several sheets are required for the plan of a floor, elevation or section, the sheets shall be numbered in continuous sequence. For example, if the architectural plans of the basement or lowest floor and the plans of the next floor above each require four drawings (symbol 3), the plans of the lowest floor shall be numbered 3-1, 3-2, 3-3, 3-4; the plans of the next floor above shall be numbered 3-5, 3-6, 3-7, 3-8.
10. REVISED WORKING DRAWINGS. When a revised drawing is prepared after plans are out for bids, a capital letter shall be used following the serial number of the drawing, with no punctuation between. "A" shall indicate the first revision, "B" the second, etc. Thus 3-6B would be the number assigned to the second revision of Drawing 3-6. Every revised drawing shall have a note at the top of the title block stating that it supersedes the original drawing or the previous revision, as the case may be. In no event shall a suffix letter be used when drawings are revised after award of the construction contract. Revised drawings shall be dated.
11. SCHEDULES. Architectural schedules of doors, windows, etc., shall be included in the "Architectural Schedules and Scale Details" series, 5-1, etc. Structural schedules shall be included in the "Structural Drawings, Scale Details, and Schedules" series, 7-1, etc.

12. COVER SHEET. The cover sheet with its index of drawings is always numbered "0-1." The sheet is furnished by PBS and shall be the first sheet in a bound set of working drawings. The other drawings shall follow in the numerical sequence determined by the basic numerical symbols that indicate the different groups.
13. CONTRACT CHANGE DRAWINGS. After a construction contract has been awarded, a change may have to be made for various reasons. If so, form PB-13 "Request for Contract Change" (CCC), is filled out, either by Public Buildings Service or by Contract Architect-Engineers, and those changes involving basic design will be acted on by the Contract Change Committee of the Central Office. Any architectural drawings needed will be Contract Change Drawings (Symbol 11). If the resulting structural and mechanical alterations are minor they may be shown on the Architectural Contract Change Drawings. But if the changes result in extensive structural or mechanical alterations, separate Structural Contract Change Drawings (Symbol 12) and Mechanical Contract Change Drawings (Symbol 13) must be prepared. The Contract Change number is the number on the form "Request for Contract Change". (See sample form in appendix A, Design Data drawing no. 28-1-21, and 28-1-28.)

CHAPTER 4.
SPACE DATA

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CHAPTER 4. SPACE DATA

PART 1. SPACE DIRECTIVE

1. DEFINITION. The Space Directive is a printed form on which are listed the names of the Government agencies that are to occupy the proposed building or extension and the amount of space to be allotted to each agency. It also contains other information needed to begin sketches.
2. PRECEDENCE OF SPACE DIRECTIVE. GSA handbooks for the design of particular types of buildings frequently show the minimum acceptable size for various spaces. These are for illustrative rather than for design purposes. The definitive figures given in a Space Directive take precedence over the general figures given in a handbook.
3. AREAS FOR FURNITURE. The Space Directive or other documents may specify the number of desks, file cases, or other items of equipment to be installed in certain rooms or spaces. These items are listed so a room can be proportioned properly to accommodate its furniture and equipment for best functional use. The lists are complete enough only for design purposes.
4. SPACE DIRECTIVE DATA. A record should be made of the date of the Space Directive on which are based the Diagrammatic Sketches and Tentative Sketches by noting near their lower right corner:

"Based on Space Directive dated _____"
5. EXAMPLE. GSA Form 261, Space Directive, Appendix A, is for an imaginary Post Office and Court Building (Trent, Iowa). The Directive also includes provision of space for U.S. Courts and other Government agencies. In addition to the Space Directive, there is a blank form on yellow paper PBS-143, SPACE DIRECTIVE CHANGE, Appendix A, to record and advise the contract architect-engineer of changes or additional data received by PBS after the original Space Directive has been issued.

PART 2. AREAS AND VOLUME OF BUILDINGS

6. CLASSIFICATION OF AREAS. Areas of buildings are divided into the following classifications:

- a. Gross area
- b. Net assignable area
- c. Circulation area
- d. Mechanical area
- e. Construction area
- f. Total net area

7. GROSS AREA.

a. Definition. Gross area is the sum of the floor areas included within the normal outside faces of exterior walls, disregarding architectural setbacks or projections, and pertains to all stories or areas which have floor surfaces.

b. Computing Gross Area.

(1) Measurements are taken from the normal outside faces of exterior wall disregarding cornices, pilasters, buttresses, etc., which extend beyond the wall faces.

(2) Where a ground level or intermediate story or part thereof is left unenclosed, this area is not included as part of the gross area of a building.

(3) In addition to areas obviously in this category, gross area includes basements (except unexcavated portions), attics, garages, roofed porches, mezzanines, loading platforms, penthouses, and mechanical equipment floors, lobbies, and corridors, provided they are within the normal face lines of the building. Since Post Office mailing platforms are always included in net assignable area, they are included in gross area regardless of whether they are within or outside of the exterior wall lines of the building.

(4) Gross area does not include open courts, light wells, upper portions of rooms, lobbies, etc., which rise above the story being measured or extend beyond the principal exterior walls.

(5) Unenclosed roofed areas such as canopies at border stations are included in the gross area.

(6) Unroofed features such as cooling towers are not included in gross area.

8. NET ASSIGNABLE AREA.

a. Definition. Net assignable area is that portion of the gross area which is assigned or available for assignment to using agencies, including space which is available jointly to the various occupants of the building, classified as "agency area". It also includes space provided for the operation and maintenance of the building, classified as "custodial area". These areas all must be listed in the space directive.

b. Types of Space Included.

(1) Office Type Space. This is space which provides an environment suitable for office operation including adequate lighting, heating and ventilation, appearance, accessibility, floor covering, and sound control. Office type space may have permanent partitions, or may include general office space (see Glossary, chap. 16).

(2) Storage Type Space. This is space suitable for storage of supplies, equipment, records, material, etc., and does not provide an environment suitable for office type operation. This type includes vaults, closets, unfinished attic and basement areas, as well as space built for warehousing and record storage.

(3) Special Type Space. This is space which, by reason of installed fixed facilities or utilities, is adapted for special use. Included are laboratories, darkrooms, electronic data processing rooms with special airconditioning, industrial type operations with installed equipment, etc. Post Office Department special type space includes workrooms, swing rooms, lock box and service lobbies, mailing vestibules and platforms. Unenclosed roofed areas such as canopies at border stations shall be included in the net assignable area to the extent they are included in the gross area.

c. Typical Areas Classified by Type.

(1) Agency Areas.

(a) Office type space may include the following:

Offices
File rooms
Laboratories without fixed equipment
Libraries without fixed stacks

Credit unions
Supply rooms
Conference rooms
Reserve

(b) Storage type space may include the following:

Storage
Vending stands
Laboratories without fixed equipment
File rooms
Reserve

(c) Special type space may include the following:

P.O. box and service lobbies
P.O. workrooms
P.O. swing rooms
P.O. mailing platforms
Vaults
Laboratories with fixed equipment
Courtrooms
Libraries with fixed stacks
Auditoriums
Private toilets
Reserve

(2) Service Areas.

(a) Office type space may include the following:

Health units
Joint-use conference rooms
Concessions

(b) Storage type space may include the following:

Garages including inside ramps, driveways, van locks,
etc.

Vending stands

(c) Special type space may include the following:

Cafeterias, kitchens, and snack bars
Concessions

of space, whether or not such areas are enclosed by partitions.

b. Types of Areas Included.

(1) Permanent Circulation Areas. These areas include those which are enclosed by permanent partitions for the purpose of physical access to various parts of the building, and are divided into the following categories:

(a) Horizontal Circulation Areas. These include the following:

- Elevator lobbies
- Entrance lobbies
- Public lobbies
- Public vestibules
- Pedestrian tunnels and bridges
- Public corridors with permanent partitions
- Service corridors with permanent partitions
- Protected corridors

(b) Vertical Circulation Areas. These include the following:

- Elevator shafts
- Escalators
- Fire towers or stairs
- Stairwells

(2) Nonpermanent Circulation Areas (Horizontal). These areas include those areas required for access and safety purposes and which are unenclosed or are enclosed by movable partitions. When no corridor pattern is shown for the building or portion thereof, except those basic corridors which are part of, or adjacent to the core, the corridor areas shall be estimated. An allowance shall be made for these phantom corridors on the basis of 10% of unpartitioned area. This applies only to general office space (see Glossary, chap. 16). It does not apply to post office workrooms, auditoriums, libraries, storage and garage space, and other special areas; nor does it apply to access lanes installed by occupying agencies for operational purposes.

c. Computing Circulation Area. Circulation area is computed by measuring from the inner faces (or room side) of the walls or partition which enclose such areas. In the event that areas normally required for circulation are not enclosed by partitions, measurements should be

taken from the imaginary lines which conform as nearly as possible to the established circulation pattern of the building. When projecting corridor areas, only those areas required for general access are included. Aisles which are normally required for circulation within offices or other working areas are not included.

10. MECHANICAL AREA.

a. Definition. Mechanical area is that portion of the gross area designed to house mechanical equipment, utility services, etc., and includes the following:

- Boiler rooms
- Mechanical and electrical equipment rooms
- Cooling tower (enclosed)
- Fuel rooms
- Meter closets
- Duct shafts
- Service chutes
- Vents
- Stacks
- Public toilets
- Public toilet vestibules or anterooms
- Rest or lounge area associated with toilets

b. Computing Mechanical Area. Mechanical area is computed by measuring from the inner face of the walls, partitions, or screens which enclose such areas.

11. CONSTRUCTION AREA. Examples of areas normally classified as construction are walls and permanent partitions, columns, projections, and unusable areas in attics, basements, etc. Precise computation of construction area is not contemplated as some construction features are included in the computation of net assignable area. Total construction area is usually determined by assuming it to be the residual area after the net assignable, circulation, and mechanical areas have been deducted from the gross area.

12. TOTAL NET AREA. This term indicates that portion of the gross area which is composed of the sum of net assignable area and permanent and nonpermanent horizontal circulation areas.

13. RATIO OF NET TO GROSS AREA. The ratio of net to gross area is computed by dividing the total net area by the gross area.

14. METHOD OF COMPUTING VOLUME. The volume of a building is computed by multiplying the gross area of each story by the floor-to-floor story height, figured in the following manner:

a. Areas.

(1) The measurements for the gross areas of floors are taken from the normal outside face of exterior walls at floor levels. The areas of basements are obtained from the normal outside face of foundation walls at basement floor level.

(2) Interrupted areas where lobbies, halls, courtrooms, etc., rise through more than one story shall be included as part of the gross area of the upper stories into which they extend. (This is for purposes of cubing only - not for computing gross floor areas.)

b. Heights.

(1) The heights of stories (between the basement and the top story) are measured from finish floor level to finish floor level.

(2) The vertical dimensions used for cubing basements shall be measured from the bottom of the basement floor slab to the finish floor level of the first story; except that if there is a stone-fill drainage bed below the slab; the vertical dimension is taken from the bottom of this drainage bed.

(3) For the height of the top story, under approximately flat roofs, the measurements are taken from the finish floor level to the mean level of the roof surface.

c. Buildings Without Basements. When a building or a portion of a building has no basement, the area of the portion having no basement (measured from the outside face of foundation walls or piers), is multiplied by one-half of the vertical dimension between the average top of footings and the finish level of the first floor. The cubic volume thus obtained is added to the overall cubic content of the building.

d. Extensions at Basement Level. Basement vaults, storage spaces, etc., which project beyond the normal outside face of the foundation walls, shall be computed separately by multiplying the area (taken from the outside face of foundation walls at the basement floor level to the outside face of the vault or other projecting area) by the

height, taken from the bottom of the drainage bed (or bottom of the floor slab, if there is no drainage bed) to the mean height of the top of the covering platform or slab. The volume so obtained is added to the basement volume.

e. Inaccessible Spaces. Where entrance platforms, mailing and loading platforms, or public entrance steps are built over inaccessible spaces, there shall be added to the basement volume the cubage obtained by multiplying the area of such spaces (measured from the outside face of platform or step foundations) by one-half of their height (measured from the top of the footings to the top of the platform slab or the mean rise of the steps).

f. Projecting Elements. If roofed, the cubage of projecting elements is added in full to the volume of the story in which they occur. (This applies to loading and mailing platforms, porches, loggias, porticos, and the like.)

g. Roofs and Projections Above Roofs. Where roofs are other than flat, the geometric volume of the attic story in full is added to the building volume. Measurements are to the outside surface of the roof. Ordinarily, small dormers, skylights, or smoke and vent stacks projecting above the roof may be disregarded; but towers, penthouses, domes, large dormers, or skylights and the like must be cubed separately and their volume added to the overall volume of the building.

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CHAPTER 5. DIAGRAMMATIC SKETCHES

PART 1. GENERAL

1. DEFINITION.

a. Preparation of diagrammatic sketches is the next step. Diagrammatic sketches are single-line drawings in pencil that translate the Space Directive into plans, sections, and elevations. The dimensions should be approximately correct, but not final.

b. On small projects this submission may not be required. Contract Architects should refer to their contracts for this requirement.

2. SCALE AND LETTERING. Diagrammatic sketches are usually drawn to a $1/32''$ or $1/16''$ scale. The scale should be noted under the title of each drawing on the sheet.

3. PLANNING MODULE FOR GENERAL OFFICE SPACE. PBS has found the five-foot module in both directions as best suited to space layout with movable partitions. The architect shall use this module as a minimum. The heating, airconditioning, lighting, and underfloor duct systems shall be adapted to the module selected.

4. EXTENT OF SKETCHES. The diagrammatic sketches should show clearly the basic scheme of the project, but they must not be elaborated beyond the requirements set forth in the text and on the example drawings.

5. SKETCHES REQUIRED. Diagrammatic sketches shall consist of a site plan, roof plan, all floor plans, transverse and longitudinal sections and elevations. The sketches must show the circulation, entrances, corridors, stairways, elevators and escalators, if any. They must show the overall space assigned to each agency or activity of the Government, corresponding to the space assigned to it in the Space Directive; also space for all mechanical and electrical equipment, toilet rooms, stacks, and wire closets.

6. SITE PLAN. The following should be noted on the Site Plan:
"Based on Topographic Survey dated _____".

7. FLOOR PLANS. On drawings of Floor Plans, the following should appear:
"Based on Space Directive dated _____".

8. IDENTIFYING SPACE.

a. When more than one room is assigned to an agency or activity, the partitions of each room should not be drawn except where noted below, but the total assignment should be indicated by witness marks outside the building line.

EXCEPTIONS: All basement spaces, and all individual rooms in post offices, U.S. courts, border stations, agricultural laboratories and other special purpose projects should be identified, as in drawing 20-1, because PBS works with the agencies concerned at this diagrammatic stage.

b. The following should not be shown: Door openings, vaults (except postal), closets (except service), cells, lobby desks, bulletin or directory boards, windows, furniture, plumbing fixtures or materials; nor should the kinds of partitions be noted.

9. SCHEDULE OF AREAS.

a. The square feet "requested" and "provided" for each agency by floors should be shown on a schedule placed at the right of the same sheet on which is shown the related floor plan. Custodial space should be treated as if "custodial" were a Government agency. The agency to which an activity belongs can be determined by consulting the Space Directive. For instance, the sample Space Directive shows that "U.S. Attorney" and "F.B.I." belong under "Justice", whereas "Probation Officer" belongs under "Courts".

b. On the first sheet of the series there shall be placed at the right of the sheet, a table of "Grand Totals of Areas," broken down into net agency and custodial, reserve, total net assignable, and gross, with percentage figures as shown on drawing 20-1. The volume of the building shall also be given.

c. The net areas of rooms or other spaces are not to be noted on the diagrammatic floor plans.

10. SECTIONS. In both the longitudinal and transverse sections, the important rooms indicated by name, and abbreviated if necessary, should be shown.

11. ELEVATIONS. The elevations should show only block outlines and breaks without windows.

12. FUTURE EXTENSIONS. Definitely planned or probable future extensions shall be indicated by dotted outlines on the plans and elevations. The words "Future Extension" should be noted and witness marks, if necessary, should be used to indicate the limits of the extension.
13. TOPOGRAPHIC SURVEY. FBS will attach to each set of diagrammatic sketches a print of the approved topographic survey.
14. MAIN ENTRANCE. When a building has facades on two or more streets, the main entrance can normally be identified by its special architectural emphasis. When the entrances are of equal importance, the one on the principal street shall be considered as the main entrance. If there is no principal street, an arbitrary choice of the main entrance can be made.
15. IDENTIFYING THE FLOORS. The floor approximately on the same level as the main entrance is designated as the "first floor". When a lot slopes downward from the main facade, so that one or more secondary entrances lead to an office level below the first floor, this level is designated as the "ground floor". When a lot slopes upward from the main facade, there is no "ground floor". A secondary public entrance at the rear of the building may be at the second story level, or higher, if the slope is steep.
16. MECHANICAL AND ELECTRICAL.
 - a. Diagrammatic sketches should indicate space for mechanical and electrical equipment, toilet rooms, stacks, wire closets, transformer and switchgear rooms, and the number and location of elevators or escalators. Sewer elevations should be shown. Toilet facility requirements including the number and type of fixtures are described in chapter 3 of the Mechanical and Electrical Engineering Handbook.
 - b. Mechanical and Electrical Data Forms for plumbing, heating, air-conditioning, and electrical should be completed and two copies of each submitted.
 - c. Since the building design and arrangement is so dependent on the types of mechanical and electrical systems selected, it is recommended that the mechanical and electrical engineers be brought into the design at this stage. The economic analyses for mechanical and electrical systems should be at least initiated during the diagrammatic stage since it is imperative that these analyses be approved and the type of systems be selected at the tentative sketches stage, prior to the start of the working drawings.

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17. SUBMISSION OF BORING LOCATION DRAWING. After the diagrammatic sketches have been approved and the location of the building firmly established, instructions will be sent to the contract architect-engineer concerning preparation of Boring Location drawing 32-1 and other documents required to obtain bids for soil investigation.
18. ROUGH SKETCHES OF DESIGN CONCEPTS. Before diagrammatic sketches are submitted, the Architect-Engineer shall furnish the office of Design and Construction with rough concept sketches (plans and elevations) together with photographs (snap-shots) of the area contiguous to the site. These sketches need not be finished drawings but should present enough information to convey a design concept for the project. The sketches should illustrate the architectural character of the building with emphasis on the following items: unity and harmony with the surrounding area and buildings, regional architecture, proportions, exterior facing materials and structural system. The purpose of these sketches is to explore the various possible solutions to the design problem. The A-E shall indicate his preference from all of the submitted sketches. The office of D&C will review and comment upon each sketch before returning it to the A-E. After a particular sketch has been approved, the A-E shall then proceed with diagrammatic sketches. If the sketches are not satisfactory, he shall submit further studies until agreement is reached.

PART 2. CHECKLISTS

19. PURPOSE. The checklists which follow are intended to aid the architect in avoiding omissions from the diagrammatic sketches; those items which apply must be shown or noted, or both.

20. DIAGRAMMATIC SITE PLAN. (Drawing no. 20-1, appendix B)

Alleys, public and private

Areaways

Compass

Date of Topographic Survey

Dimensions:

 Loading platform, front and ends, to opposite limits of
 paving or trucking area

 Overall (building)

 Property lines (from survey)

 Property lines to building at first story

Elevations or grades

 First Floor

 Basement Floor

 Finished grades:

 Adjoining properties

 Corners of building

 Corners of property

 Entrances to building

 Entrances to driveways at street

 Principal corners of driveways and trucking area

 Sanitary and storm sewers opposite property lines

Encroachments

Flagpole, ground

Future Extension to be indicated by dotted outline and note.

Grand Totals of Building Areas:

 Name of floor (In column)

 Net agency and Custodial area provided on each floor " "

 Reserve area provided on each floor " "

 Total net assignable area provided on each floor " "

 Gross area of each floor

 Total of each column

 % of Total net area to gross area

 Volume of building in cubic feet

Name of contract architect - engineer

Names of streets and avenues

Scale: Noted under title of each drawing on the sheet

Sidewalks

Steps:

- Areaway
- Entrance
- Indented

Survey, Topographic: Date to be noted.

Symbols: (Des. Data 28-1-4)

- Building entrances
- Compass

Titles: Noted below each drawing on sheet, with single underline

Title of building (within building outline)

Trucking Areas

Walks

21. DIAGRAMMATIC FLOOR AND ROOF PLANS. (Drawing no. 20-2 and 20-3.)

Areaways

Chimney; stack

Closets, service

Closets, telephone

Closets, wire

Columns, structural

Compass

Concessions

Corridors

Elevators:

- Passenger

- Service

- Dumbwaiter

Entrance symbol

Escalators

Future Extension. Indicated by dotted outline and note.

Gear Rooms

Lobbies:

- Elevator

- Entrance

- Lock Box

- Post Office

- Public

Locker Rooms:

- Agency

- Custodial

Lookout System (dotted lines); also floor level and over vaults

Maintenance and Repair Rooms

Airconditioning

Boiler

Fuel

Incinerator

Pump

Radio

Transformer vaults

Platforms:

Loading

Mailing

Roofs:

Lower (shown on floor plan above)

Principal (shown on separate plan)

Scale: Noted under title of each drawing on sheet

Schedule of Areas:

Names of agencies

Reserve area

Net area requested

Net area provided

Totals for each floor, requested and provided

Grand totals of building, requested and provided

(to be placed on the last sheet of the floor plans)

Grand totals of areas (always located on Dwg. 20-1 above title block)

Shafts:

Airconditioning

Lookout

Pipe, if large

Ventilating

Space Directive Data

Stacks:

Boiler

Incinerator

Stairs

Steps:

Areaway

Entrance

Indented

Swing Rooms:

Agency

Custodial

Symbols: (Des. Data 28-1-4)

Building entrances

Compass (on all sheets of floor plans)

Standard section lines

Telephone Suite:

- Frame Room
- Switchboard Room
- Toilet

Title of each drawing on sheet, single underline

Toilets (male and female):

- Agency employees
- Custodial
- Private
- Public

Unexcavated Areas

Unfinished Areas

Vault (postal, clerk of court)

Vestibules:

- Entrance
- Mailing
- Post Office

22. DIAGRAMMATIC SECTIONS. (Drawing no. 20-4, appendix B)

Dimensions:

- Canopies and marquees (clear height)
- Court Room (clear height)
- Floor to floor and to roofs (including penthouse)

Lookouts:

- Floor Type
 - Clear height inside
- Hanging Type
 - Clear height under
 - Clear height inside

Platforms:

- Loading
- Mailing

Post Office:

- Box Lobby
- Service Lobby
- Work Room

Projection of canopies and marquees

Scale: numerical scale under title of each drawing on the sheet

Titles of principal rooms

Unexcavated areas

23. DIAGRAMMATIC ELEVATIONS. (Drawing no. 20-4, appendix B)

Building entrances (indicated by entrance symbol on center line
below grade)

Entrance steps

Grades, floor: (thin dash-and-dot lines outside of one elevation,
with dimensions from floor to floor and to top of
roof slabs)

Marquees and Canopies (14'-0" clearance)

Outline of walls attached to building

Penthouses

Platform (Outline):

 Loading

 Mailing

Scale: Numerical scale under title of each drawing on sheet

Stacks

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CHAPTER 6. TENTATIVE SKETCHES

PART 1. GENERAL

1. DEFINITION. After diagrammatic sketches have been approved, the next step is to prepare tentative sketches. These are double-line drawings in pencil that translate the diagrammatic sketches into plans, sections, and elevations. Tentative sketches are not preliminary final drawings. These sketches, after approval, establish the basic design of a project. Dimensions should be approximately correct.
2. SCALE AND LETTERING. Preferably, 1/16" scale should be used for the plans, sections, and elevations, although 1/32" scale is permissible on large projects. Special designs should be to 1/8" scale.
3. STRUCTURAL. Tentative sketches are required. These are prepared in accordance with the Structural Engineering Handbook. (See drawings 21-10 to 21-14 inclusive, appendix C.)
4. MECHANICAL-ELECTRICAL. The tentative submission shall include the following mechanical and electrical information:
 - a. Plumbing.
 - (1) Location and size of existing utilities and service connections to building or buildings.
 - (2) Location and arrangement of all major items of equipment.
 - (3) Preliminary calculations for determining sizes and types of plumbing equipment and systems.
 - (4) Justify selection of tankless or hydropneumatic system where required to boost water pressure.
 - (5) Plumbing layout of typical toilet rooms, showing drainage and venting system.
 - (6) Schematic diagrams showing complete drainage, venting, and water systems. Include laboratory services, if any.
 - (7) If the Mechanical Data (Plumbing) sheets, GSA Form 1287, have not been submitted, they must be included with the tentative sketches submission.

b. Heating.

- (1) Preliminary layout and description of outside distribution systems from central plant, including location and size of existing mains and building connections.
- (2) Location and arrangement of all major items of heating equipment and of incinerator and engine generator sets, if required.
- (3) Block load heating calculations based on the exposed wall, glass, and roof areas. Calculations shall include the loads for heating fresh air for ventilation, domestic water heating, process requirements, and summer and winter boiler loads. Also, Design Data drawing no. 30-3-9, sheets 1 and 2, showing heating load and boiler information, shall be included.
- (4) Complete single-line piping diagrams of all heating systems showing equipment for the entire building. Diagrams shall include airconditioning and ventilating coils, perimeter heating system, and special heating for stairways, lobbies, entrances, garages, etc.
- (5) Complete schematic control diagrams for heating systems. See Standard Detail and Design Data drawings that are applicable to the project.
- (6) Economic analysis (GSA Form 1289) to show comparative costs and recommendations for fuels for heating. Economic analysis for snow-melting system (electric, M.I. cable, and heating cable in conduit versus heat transfer oil).
- (7) If the Mechanical Data (Heating) sheets, GSA Form 1590, have not been submitted, they must be included with the tentative sketches submission.
- (8) Complete equipment and piping diagram with heat balance calculations for steam generating systems operating at over 40 p.s.i.g.

c. Airconditioning.

- (1) Location and arrangement of all major items of equipment.

- (2) Block load airconditioning calculations for peak time of day.
- (3) Economic analysis (GSA Form 1803) to show comparative costs and recommendations for refrigeration plant.
- (4) If a high-velocity duct distribution system is proposed, economic justification should be provided.
- (5) Single-line layout of ventilating and airconditioning ductwork to indicate number of zones, type of system, such as high or low pressure, multizone, etc., and extent of each system. Elevator machine room ventilation should be included.
- (6) Psychrometric chart study for each type of air-handling system.
- (7) Schematic temperature control diagrams.
- (8) Schematic flow diagrams for air-handling equipment, condensing water, and chilled water.
- (9) Air outlet location for typical areas.
- (10) Particular attention should be given at this stage to insure that the layouts suit the modular space arrangement for the building.
- (11) Location of cooling tower, with method of screening from view.
- (12) If the Mechanical Data (Airconditioning) sheet, GSA Form 1651, has not been submitted, it must be included with the tentative sketches submission.

d. Electrical.

- (1) Location and size of existing utilities and service connections to building or buildings.
- (2) Location of electric and telephone closets and location and arrangement of all major items of equipment, including telephone switchboard, etc.
- (3) Preliminary calculations for electrical systems.
- (4) Economic analysis to show comparative costs and recommendations for the method of metering electric service.

- (5) Single-line diagram of electric service and distribution, including transformers, panelboards, feeders, etc.
- (6) Typical underfloor duct layout.
- (7) Particular attention should be given at this stage to insure that the layouts suit the modular space arrangement for the building.
- (8) If the Electrical Data sheets, GSA Form 1288, have not been submitted, they must be included with the tentative sketches submission.

e. Illumination.

- (1) Lighting-fixture pattern for typical areas.
- (2) A symbol or note should indicate where combination air diffuser - lighting fixture troffers are planned.
- (3) Calculations to indicate intensity of lighting to be expected in typical areas.
- (4) Particular attention should be given at this stage to insure that the layouts suit the modular space arrangement for the building.

f. Elevators, Materials Handling Equipment, Etc.

- (1) Listing of capacity and speed of elevators and size of escalator units planned.
- (2) Single-line diagram of pneumatic-tube system, and conveyor system, if any.
- (3) Location of equipment such as scales, adjustable loading ramps, power-operated doors, and materials handling equipment which will be included in the contract.
- (4) Roof track layout for power-operated window-washing scaffold if fixed windows are planned, and sketch showing method proposed to stabilize working platform on building face. Special authorization is required for the inclusion of fixed windows which necessitate the provision of a power-operated window washing scaffold. Normally, such authorization is not granted for buildings with less than 1000 windows.

5. ARCHITECTURAL. The architectural tentative sketches comprise a site plan, floor and roof plans, sections, elevations; also, a line perspective sketch if required by the contract. The sketches should include the design, to 1/3" scale, of courtrooms, lobbies, auditoriums and other special areas, to show the treatment of interior walls, floors, and ceilings, as well as airconditioning and lighting. The typical exterior wall constructions should be detailed by two vertical sections to at least 3/4" scale, one cut on a line through the windows and the other on a line through the wall proper and accompanied on the same sheet at the same scale by a partial elevation and plan section. These details should be sufficiently developed to indicate the basic method for anchoring or bonding the wall. Module lines should be shown on all plans for general office space; they need not be shown for other areas.
6. SITE PLAN. The following note shall appear on the Site Plan:
"Based on Topographic Survey dated _____".
7. FLOOR PLANS. Drawings of floor plans shall have this note:
"Based on Space Directive dated _____".
All rooms and spaces should be indicated individually. When more than one room is assigned to one agency or activity, the total assignment by witness marks outside the building line, should be shown, as on drawings 21-3 through 21-5, appendix C. There should be noted within each room or space, its title - abbreviated when necessary - and directly below the title the finish number as "F-1", "F-17", etc. The area of the room or space is noted at the lower right corner. The schedules of net square feet "Requested" and "Provided", the grand totals of square feet requested and provided, and the "Grand Totals of Areas" should be included just as on the diagrammatic sketches. (Drawings 21-1 to 6 incl. appendix C).
8. DESIGNATION OF P.O. SWING, LOCKER AND TOILET ROOMS. Federal buildings containing space for post office swing, locker and toilet rooms, shall only be designated on floor plans by the following room titles as appropriate:

"Men's Swing Room"
"Men's Locker Room"
"Men's Swing and Locker Room"
"Men's Toilet" or "Men"
"Women's Swing Room"
"Women's Locker Room"
"Women's Rest Room"
"Women's Toilet" or "Women"

When more than one room of the above is required in other locations in the building, they shall be further identified on the floor plans by appropriate room numbers.

9. PARTITION LAYOUT.

a. General Office Space. In general office space of new Federal buildings, the office partition layouts will be developed on the tentative sketches to insure that the division of space, as required by the Space Directive, can be accomplished. The term general office space means space in buildings where several agencies (other than the Post Office Department, Department of Justice, court facilities or the United States courts) occupy space of such nature as will require a division into small units.

b. Type of Partitions. Corridor partitions may be of the permanent or movable type, full height, but interoffice partitions in general office space shall be of the movable type.

c. Permanent Partitions. Permanent partitions will be indicated by PBS during review of the tentative sketches. The partitions considered permanent will be marked on a set of tentative sketches for return to the contract architect.

d. Modular Layout. General office partitions shall follow the modular layout of the space. (See Design Data 28-1-40.)

10. NUMBERING OF ELEVATORS. Elevators are numbered as follows: The numbering starts with the first group of elevators reached from the main entrance, the elevators being numbered in a clockwise direction. The numbering for the other groups of elevators continues clockwise both for the groups and the individual elevators within a group. Elevator numbers are in consecutive order and the numbers are repeated unchanged on each floor plan.
11. NUMBERING OF STAIRS. Stairs are numbered consecutively in a clockwise direction starting with the stairway reached from and to the left of the main entrance.
12. SECTIONS - LONGITUDINAL AND TRANSVERSE. The important rooms should be shown and identified by name (Drawing 21-8, appendix C).
13. ELEVATIONS. Entrance, windows, belt courses, and any special features necessary for estimating, as well as all applicable items on

check list should be indicated. Areaways, windows, and doors below grade are shown in dotted lines. The extent of indicating some jointing is left to the discretion of the Architect. Major materials in general terms such as brick, stone, granite, iron, bronze, aluminum, etc., should be noted either directly on the elevations or in consolidated notes above the title panel in the lower right corner, in order to give the estimator the information available at this stage. (Dwg. No. 21-7, appendix C).

14. CORNERSTONE.

a. Buildings constructed by GSA shall have a cornerstone of granite, limestone, or marble. The inscription shall be in accordance with Standard Detail 6-6-2. Date and names shall coincide with the date the cornerstone is set.

b. Where a building is constructed by GSA with funds appropriated to another agency, additional names, if any, will be determined on a case basis.

15. PLAQUES AND TABLETS. No plaques or tablets are to be provided for the interior of Federal Buildings, **except upon special authorization.**

16. SEALS. Replicas of the obverse and reverse sides of the Great Seal of the United States shall be installed on all new Federal buildings and major extensions or conversions of existing buildings, preferably near the main public entrance. The seals, which are either 30" or 22" in diameter and cast in aluminum, will be furnished by the Government for installation by the construction contractor. (See Standard Detail 6-22-3, for installation.) For buildings constructed by GSA with funds appropriated to another agency additional seals, if any, will be determined on a case basis.

17. FUTURE EXTENSIONS. Probable, or definitely planned future extensions shall be indicated by dotted outlines on the plans and elevations. The words "Future Extension" should be noted and witness marks, if necessary, should be used to indicate the limits of the extension.

18. TOPOGRAPHIC SURVEY. PBS will attach a print of the approved topographic survey as the last sheet of each set of prints of tentative sketches.

19. LINE PERSPECTIVE SKETCH. The contract may require a line perspective sketch. The sketch need not be a finished product, but should present the desired appearance of the building. On some projects a block model of the building may be required in lieu of the perspective sketch.

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20. TITLE BLOCKS. These should be filled in with all the data available at the time the sketches are made, including the date (Design Data 28-1-17, 18, 19, 20, 21, 22, 24). Revised drawings shall indicate the date of revision.

21. TITLES OF FEDERAL BUILDINGS.

a. All buildings being constructed either under purchase contract or by funds appropriated directly to GSA, shall have the title "Federal Building." This includes major extensions where one side of the extension becomes the front or main facade.

b. When the title of the building, as shown by Congressional documents, includes United States Post Office, United States Court House, or United States Custom House, the building shall have a secondary title indicating the name or names of these agencies.

c. An example of the building title when one of these agencies is involved is:

FEDERAL BUILDING

UNITED STATES POST OFFICE

d. When more than one of the agencies are occupants, for example, the Post Office and Courts, the title shall be:

FEDERAL BUILDING

UNITED STATES POST OFFICE

UNITED STATES COURT HOUSE

or

FEDERAL BUILDING

UNITED STATES POST OFFICE AND COURT HOUSE

e. When a postal station is included in a new Federal building the name of the station shall be added to the title such as:

FEDERAL BUILDING

UNITED STATES POST OFFICE

CIVIC CENTER STATION

(or if a secondary entrance)

UNITED STATES POST OFFICE

CIVIC CENTER STATION

f. The street address shall be placed on a new Federal Building in cities where there is an existing Federal Building to remain. The address shall be obtained from the pertinent GSA regional office.

g. Federal buildings in towns with less than 10,000 population shall also have the name of the town, the state, and if a Post Office is included, the "ZIP" code number.

h. Abbreviations are not permitted in building titles.

22. RENDERED PERSPECTIVE. When required by the contract, the contract architect-engineer shall submit a rendered perspective immediately after approval of the tentative sketches. The rendering shall be done by a professional renderer who shall produce an artistic work of high quality. The following requirements shall be observed:

a. Medium. The perspective shall be in colors or monotone, in any medium suitable for photographic reproduction. The environment of the building as it actually exists, or will exist after the building is completed should be portrayed; emphasis however, should be given to the building, not to the details of its surroundings.

b. Scale and Materials Indication. Human figures shall be put at or near the main entrance to establish the scale of the building. The extent to which materials are indicated may be dictated by the esthetic judgment of the architect.

c. Vanishing Points and Horizon. Design Data 28-1-11 shows a method of locating the station point in the center of the finished picture and far enough from the building to prevent optical distortion. Design Data 28-1-12 indicates a method of drawing the perspective when either vanishing point is off the board. The horizon should be as low as possible and never higher than four feet above the grade at the base of the building.

d. Title on Rendered Perspective. On the original perspective there shall be lettered in black ink, at the bottom left corner, the title of the project and name of the contract architect-engineer in capital letters:

FEDERAL BUILDING
UNITED STATES POST OFFICE AND COURT HOUSE, CLAWSON, IOWA
SMITH, BLANK AND SMITH - ARCHITECTS-ENGINEERS

and at the bottom right corner in capital letters:

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C.
or GENERAL SERVICES ADMINISTRATION
REGION _____ CITY _____ STATE _____

if a regional project. The title of the building, and if the population is under 10,000, the name of the city and State shall be indicated in their designated location on the building.

23. EXHIBIT CASES.

a. Exhibit cases for historic documents shall be installed in the lobby of all new Federal buildings and in an extension to an existing building when the design provides a complete public or new post office lobby. Exhibit cases shall be installed in the public area of new U.S. border stations when space permits, (see Standard Detail 6-19-8).

b. The exhibit cases will be furnished by the Government for installation by the contractor.

24. FACILITIES FOR THE PHYSICALLY HANDICAPPED.

a. Access. All new Federal buildings shall provide easy access of wheel chairs to the first floor entrance lobby. Where steps are unavoidable, level access to a secondary entrance, or access by means of a ramp with slope not greater than 1 foot in 12 feet shall be provided.

b. Conveniences. All new buildings over 50,000 square feet in gross area, or smaller buildings if the need dictates, shall be provided with conveniences for persons confined to wheel chairs, as follows:

(1) One toilet stall farthest from the entrance door in one men's public toilet room, preferably on the first floor, shall be provided with a water closet 20" high from floor to top of seat, and with two assist bars on side walls. A similar facility

shall be provided in one women's public toilet room. In addition, special provisions shall be made for arrangement of toilet room accessories, in accordance with Design Data 28-20-2 and 28-20-3.

(2) One wall-mounted drinking fountain, preferably on the first floor, shall be provided with basin 36 inches above the floor.

c. Additional Conveniences in High Rise Buildings. In high rise buildings facilities as described in b (1) and b (2), above, shall be duplicated for every ten stories, or fractions thereof.

d. Inclusion in Tentative Sketches. The facilities described in b (1) above shall be included in the tentative sketches.

25. FINE ARTS COMMISSION. For all Federal buildings in the Metropolitan Washington area only, the tentative sketches will be submitted by PBS to the Fine Arts Commission for approval. The contract architect must make all necessary changes to conform to the Commission's recommendations.

26. RESERVED.

PART 2. CHECKLISTS

27. COVERAGE. All applicable items on the lists which follow should appear on the tentative sketches.

28. TENTATIVE SITE PLAN. (Drawing no. 21-1, appendix C)

Alleys, public and private (Note)

Areaways

Ash hoist (Note)

Auto parking

Bridges

Buildings to be removed (it not shown on survey or demolition plan):

By contractor

By others

Bumpers

Coal Hole (Note)

Compass

Curbs (note new or existing)

Date of Topographic Survey

Dimensions:

Loading platform, front and ends, to opposite limits of
paving or trucking area

Overall (building)

Property lines (from survey)

Property lines to building, at first story

Property lines to street curbs

Width of driveways

Width of walks and sidewalks

Docks

Driveways

Elevations (or grades): (Des. Data 28-1-4).

Basement floor with single underline (within outline of
building)

First floor with single underline (within outline of building)

Sanitary and storm sewers opposite property lines.

Finished grades:

All corners of building

Catch basins

Entrances and exits to building

All corners of driveway, trucking areas, and auto parking

Corners of property

Spot elevations sufficient to show changes of gradient

Top and bottom, retaining walls

Encroachments

Flagpole, ground (one only, at left of main entrance when facing the building)

Future extension (indicated by dotted outline and by note)

Grand Totals of Building Areas: (Dwg. no. 21-1, appendix C)
same requirements as for diagrammatic site plan.

Gratings, areaway

Landscape:

Architectural planting-enclosures

Lawn areas

Trees retained

Name of contract Architect-Engineer

Names of Streets and Avenues (material to be noted)

Oil Filler Pipe (Note)

Railings (Note only)

Railroad track

Roads

Scale: Note under title of each drawing on the sheet

Sidewalks:

Material (Note)

To be retained (Note)

To be replaced (Note)

Steps:

Area (with direction of run)

Entrance (with direction of run)

Indented

Symbols: (Des. Data 28-1-4)

Buildings entrances

Compass

Titles (official) of building (within building outline)

Trucking area

Tunnels

Walk, to:

Entrances

Flagpoles

Other facilities

Walls, retaining

29. TENTATIVE FLOOR AND ROOF PLANS. (Dwg. nos. 21-2, 21-3, 21-4, 21-5, 21-6, 21-7, appendix C).

Abbreviations

Area of Rooms in square feet (within outline of room)

Areaways

Ash hoist (Note)

Bulletin Boards (S.D. 6-17-1) on all office floors

Cabinets: (S.D. 6-19 series)

Fire Hose

First-Aid (Note "F.A.C.")

Cages

Chimney, stack:

Boiler

Incinerator

Chutes:

Letter Mail (in buildings four stories and over) Location to be approved by Postmaster. See PBS Guide specification.

Linen

Refuse

Closets:

Coat (Coat, Cl.)

Linen (Linen, Cl.)

Service (Des. Data 28-12-2) (Serv. Cl.)

Service Sink (Note "S.S.")

Supply (Supply Cl.)

Wire (Wire Cl.)

Telephone

Compass (Des. Data 28-1-4)

Columns and Piers

Concessions

Corridors:

Private

Public

Service

Counters:

Post Office (Standard Detail 6-16-23, 24) (Des. Data 28-9-56)

Other agencies

Courtrooms: (See "U.S. Courts Handbook")

(S.D. 6-24-1, 7, 20, 21, 22, 23, 24, 25)

Custodial Spaces Required:

See Space Directive

Dimensions: (On first floor plans and succeeding plans where dimensions change)

Break Dimensions

Length and width of loading and mailing platforms

Overall

Width of corridors

Width of lobbies

Directory Board: (S.D. 6-17-1)

First Floor only

Main building lobbies

Doors (swing indicated): (Des. Data 28-7 series)

Access

Breakout

Coal

Counter gates

Double acting

Entrance

Fire (Noted "Class A-Fire Door, or B, or C")

Interior

Mailing Vestibule

Machine Room

Refrigerator

Stair

Trap

Vault (P.O., S.D. 6-15-21)

Vestibule

Wicket

Wire Mesh

Drinking Fountains (Noted "D.F." or "E.W.C.")

Elevators: (S.D. 6-15 series, S.D. 10-5 series, Des. Data 30-4 series and Des. Data 30-5 series.

Dumbwaiters

Escalators

Passenger

Private

Service

Sidewalk lifts

Entrances (Des. Data 28-7-2)

Escalators

Exhibit Case - Historical Data (S.D. 6-19-8)

Fire:

Fire Extinguisher Racks: Noted. "F.E." (S.D. 6-19-7) Type to be noted.

Hose Cabinets: (Only in buildings of four or more stories.)
Noted "F.H.C." (S.D. 6-19-2) Type to be noted.

Extinguisher Cabinets: (Used in corridors and architecturally significant locations.) Noted "F.E.C." (S.D. 6-19-3)

Extinguisher Recess: Noted "F.E.R." (S.D. 6-19-5)

Finish Number (Noted "F-16", "F-18", etc. in each space)

Flagpole, ground (S.D. 6-3-1)

Flagpole, roof, only if ground location impracticable (S.D. 6-3-2, 6-3-4)

Future Extension. Indicated by dotted outline and note.

Gear Rooms (Des. Data 28-12-1)

Guard Rooms

Handrails:

Entrance Steps (S.D. 6-10-11)
Interior (S.D. 6-10-1, 6-10-2)
Ramp

Ladders (S.D. 6-11-7)

Cooling Tower
Lookout (Direction to be noted)
Roof
Shaft
Stack

Lavatories, special:

Civil Service Examination Room
Fingerprint Room
Money Order-Registry Section
Post Office Inspector's Office (non-domiciled)

Lobbies:

Court Room
Elevator
Lock Box
Public and/or Post Office

Lobby Desks

Locker Rooms: (Indicate layout of lockers)

Agency
Custodial

Lock Boxes: (S.D. 6-16-22, Des. Data 28-9-57)

Lookout System (Separate plan if necessary):

Guard rails
Ladders (Direction "Up" or "Down" to be noted)
Observation units (Noted "Obs.U.")
Shafts

Maintenance and Repair Rooms:

Airconditioning
Boiler (boiler and sink to be indicated)
Fan
Fuel
Incinerator
Pump
Radio
Transformer vaults

Module lines (To be shown in General Office Space)

Monorails

Murals (Location noted when specifically authorized)

Name of Contract Architect-Engineer

Name of Room or Space (with single underline)

Partitions: (Des. Data 28-1-40, 28-30-52)

Platforms:

 Loading (Track-side Railroad) (Des. Data 28-9-39)

 Mailing (Des. Data 28-9-28 and S.D. 6-8-3)

Post Office Screenline: (See Glossary)

Railing and Gates:

 Exterior

 Interior

Ramps (direction and percentage of grade)

Reserved Spaces: (Unassigned Office space) (Noted "Reserved")

Roofs:

 Flat

 Lower (shown on floor plan above)

 Material

Scale: Noted below title of each drawing on sheet

Scales: (Types)

 Floor

 Monorail

 Platform (Des. Data 28-12-3, 4, and 29-2-3)

Schedule of Areas. (Same requirements as for the Diagrammatic Floor Plans.)

Shafts:

 Airconditioning

 Lookout system

 Pipe and wire

 Ventilation

Space Directive Date

Stairs: (direction of run, number of risers) (Des. Data 28-8-1, 2)

 Doors (Des. Data 28-7-2)

Steps:

 Area (direction of run, number of risers)

 Entrance (direction of run, number of risers)

 Indented

Symbols: (Des. Data 28-1-4)

 Building entrances

 Compass

Tackboards: To be noted.

Telephone Suite:

 Frame Room

 Rest Room

 Switchboard Room

 Toilet

Telephones, public: (noted)

 PBS Standard Recess (S.D. 6-21-1)

 Special

Titles to be noted:

All spaces (with single underline, Des. Data 28-1-14)

Drawing of Title Block

Name of Contract Architect-Engineer

Toilets: (fixtures and enclosures shown and noted "M" or "W")

Agency

Custodian

Private

Public

Tower, Cooling (show location)

Unassigned Spaces (Noted "Reserved")

Unexcavated Areas (Noted)

Unfinished Spaces (Noted)

Vaults (Des. Data 28-10-2)

Vestibules: (radiators to be indicated)

Employees

Entrance (Des. Data 28-7-4)

Mailing

Windows:

Exterior

Provision for washing

Interior

30. TENTATIVE LONGITUDINAL AND TRANSVERSE SECTIONS.

Columns (if visible)

Dimensions:

Floor to floor and to roofs (including penthouse)

Lookouts:

Clear height inside

Clear height under

Floor height for floor type

Marquees (clear heights and projection) (Des. Data 28-9-28)

Lookouts:

Floor type

Hanging type:

Clear height under

Clear height inside

Platforms:

Loading

Mailing

Post Office (clear heights)

Public Lobby

Work Room

Scale of Drawings

Titles of Principal Rooms

Unexcavated Areas

Unusual foundation conditions disclosed by sections, such as:

Conduits

Fills

Rocks or quicksand

Sewers

Tunnels

Window and Door Openings (in wall sections)

31. TENTATIVE ELEVATIONS.

Areaways (dotted below grade)

Cornerstone (location)

Doors, Public Entrance

Entrance doors and steps (dotted lines below grade)

Flagpole

Future Extension. Indicate by dotted outline and note.

Grades, finished

Heights:

Basement

Each floor

Levels, floor (dash and dot lines)

Marquees (Des. Data 28-9-28)

Materials: (noted in general terms as brick, stone, granite, iron,
bronze, aluminum, etc.)

Base courses

Carved or cast features

Roofs (if shown)

Sculptural features

Wall factings

Models (architectural and sculptural) (Des. Data 28-1-5)

Murals (Noted when specifically authorized)

Penthouses

Platforms:

Loading

Mailing

Scale

Railings

Sculptural indication

Stacks

Title of Building (Title to be noted) (If population is less than
10,000, name of city and State is to be given)

Tower, Cooling

Walls, attached to building

Windows (dotted lines below grade)

CHAPTER 7.
PROJECT DIRECTIVE

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CHAPTER 7. PROJECT DIRECTIVE

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CHAPTER 7. PROJECT DIRECTIVE

1. SCOPE. The project directive gives the financial breakdown of the project and contains essential information about the design, construction, materials, finishes, and equipment.
2. FORMS. Certain forms are provided for use in preparing the project directive. The following forms, GSA 123a to 123k inclusive, are to be used for new buildings, extensions, or extension and remodeling projects:

	<u>GSA Form</u>
EST Project Directive Budget (Contract Architects)	123a
EST Project Directive Budget (for office use)	123b
EST Project Directive Estimate (General Contract)	123c
EST Project Directive - Reservations	123d
A Project Directive - Site Development	123e
A Project Directive - Exterior Materials	123f
A Project Directive - Interior Materials	123g
A Project Directive - Interior Materials	123h
S Project Directive - Structural	123i
ME Project Directive - Mechanical and Electrical (sheets 1 & 2)	123j
DS Project Directive - Fire Safety	123k

3. SYMBOLS. The symbols in the upper right corner of these forms refer to the following:

A - Architectural

DS - Fire Safety

EST - Estimates

ME - Mechanical - Electrical

S - Structural

4. SPECIMENS. Copies of the project directive forms listed above are included in appendix A. For clarity, some of the forms have been filled in with typical entries for the imaginary building "Clawson, Iowa."
5. FILLING OUT THE DIRECTIVE. As various items and materials are determined upon during the preparation of the tentative sketches, corresponding notations are made on the project directive forms. The completed project directive, including a tentative estimate of cost, must be submitted with the tentative sketches.
6. PROJECT DIRECTIVE FOR REMODELING. The following forms, which are also included herein, are intended for regional use on remodeling projects only:

GSA Form

EST Remodeling - Project Directive, Budget Estimate 1647A

EST Remodeling - Project Directive, Estimate (General Contract) 1647B

DS Remodeling - Project Directive, Interior Materials 1647C

DS Remodeling - Project Directive, Miscellaneous 1647D

ME Remodeling - Project Directive, Mechanical 1647E

7. CHANGE IN PROJECT DIRECTIVE. Changes in the approved project directive, if found necessary at any stage, must be submitted on GSA Form 124 for approval before they can be incorporated in the drawings. This form may be used for any type project.

CHAPTER 8.
INTERMEDIATE
WORKING DRAWINGS

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CHAPTER 8. INTERMEDIATE WORKING DRAWINGS

1. DEFINITION AND REQUIREMENTS. Following the approval of the tentative sketches and project directive, the working drawings are begun. When all phases of the work (architectural, structural, mechanical, and electrical) have reached the stage where the information required by the subsequent paragraphs of this chapter has been incorporated on the drawings, and the average completion is approximately 50%, the drawings become intermediate working drawings. PBS then reviews the project to guard against expansion of facilities or change in materials which may increase the cost above the limit of authorized funds. Intermediate working drawing submissions are required for all projects designed by contract architect-engineers.
2. PREPARATION OF DRAWINGS.
 - a. General. Drawings shall be at final working drawing scale, and may be made in pencil. Each fragmentary detail or interior elevation is to be identified by a title. Each drawing sheet must bear the name, number, and location of the project. A rubber title stamp may be used if the impression is clear and reproducible.
 - b. Composition. Exterior details and interior elevations may be composed on the intermediate drawings. However, changes may have to be made in these details and elevations if they increase the cost of the building beyond the available funds, or if they are otherwise not acceptable.
 - c. Module Lines. These should be shown on all plans for general office space. Module lines need not be shown for other areas.
3. PARTITIONS. Permanent partitions shall be shown on the working drawing floor plans. The term "permanent partitions" will mean partitions of permanent construction (such as masonry, concrete, or steel stud and plaster) located around stairways, elevators, mechanical areas, toilet rooms, utility areas, rooms having special finishes, corridors necessary for proper exit systems, and space for permanent agencies such as the Post Office Department, United States Courts, or the Department of Justice (court facilities). Movable partitions shall be shown only where the general office space is less than 5,000 square feet (see Des. Data 28-30-52).

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4. GENERAL DRAWINGS. If the general drawings are at 1/8" scale or less, parts of the drawings shall be blown up to a larger scale, generally 1/4". The titles of the rooms and spaces shown on approved tentative sketches should be changed in accordance with the system given under "Final Working Drawings." Room areas are omitted.
5. PLANTING PLAN. The architect-engineer shall prepare a planting plan for submission with the other intermediate drawings.
6. EXTERIOR DETAILS. Typical wall sections, entrances, marquees, and other significant features should be detailed to clearly indicate design, materials, and major dimensions. All important items, including the following when they apply, should be detailed:

Balconies

Doors

Entrances

Marquees

Ornamental Work: (except when standard details are used)

Balustrades

Carving

Columns

Decoration (carved or cast)

Fences

Flagpole

Fountains

Gates

Grilles

Lighting Fixtures (if special)

Pilasters

Railings

Work Requiring Models

Sculpture (carved or cast)

Wall Sections (follow checklist under "Wall Sections" chap. 10-9, and "Exterior Details", chap. 9-25)

7. INTERIOR DETAILS.

a. Elevations. There shall be drawn elevations of architecturally significant rooms at not less than 1/4" scale. These elevations must clearly indicate design, materials, and major dimensions.

b. Partial Floor Plans. In addition to the elevations of architecturally significant rooms, partial floor plans (if needed) should be

made to explain the interior elevations or to supply information on floor materials, patterning, etc.

c. Ceilings. Partial ceiling plans may be required if ceilings are ornamental or complex.

d. Scale. An explanatory section at 3/4" or 3" scale should be drawn when necessary to explain an element to the estimator and checker.

e. Ornamental Work. All ornamental work which involves carving or casting should be clearly indicated, as well as what architectural models are necessary. The extent of painted decoration or murals should be shown by notes only.

8. SPACES WHICH MUST BE DETAILED. The following must always be included among the interior spaces detailed, if applicable:

Auditoriums

Cafeterias

Courtrooms

Elevators

Kitchens

Libraries

Lobbies:

Court

Elevator

Post Office

Public

Offices:

Special

Typical (except general office space)

Rooms:

Reception

Special

Typical

Stairs (if architecturally significant)

Toilets:

Employees

Private

Public

9. STRUCTURAL DRAWINGS. The requirements for structural drawings are explained in the Structural Engineering Handbook.

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10. MECHANICAL-ELECTRICAL SUBMISSIONS. The mechanical and electrical drawings for the intermediate submission should include the following:

a. Heating.

- (1) Layouts of boiler room, incinerator room, and other rooms containing heating equipment, developed to the extent of showing clearances for access and maintenance and showing main piping.
- (2) Heating piping on floor plans, heating system flow diagrams, riser diagrams, and control diagrams for heating system and major equipment--all sufficient to indicate contemplated design.
- (3) Layout of underground heat distribution system in sufficient detail to indicate contemplated design.
- (4) Layout of engine generator sets in sufficient detail to permit evaluation of contemplated design with regard to fuel, air, exhaust, and electrical systems.

b. Plumbing.

- (1) Layouts of typical toilet rooms and location of all plumbing equipment in mechanical equipment rooms, etc.
- (2) Typical riser diagrams for water, soil, waste, and vent piping.

c. Airconditioning.

- (1) Flow diagrams for chilled water, condenser water, and refrigerant. Typical riser diagrams for chilled water.
- (2) Partial automatic temperature control diagram to indicate contemplated method of presentation. (See Design Data 30-6-6, 30-6-7, and 30-6-8 for preferred method.)
- (3) Ductwork layout for typical fan rooms and typical areas.
- (4) Equipment room layouts developed to the extent of showing clearances for access and showing trolley beams provided for maintenance. (See Design Data 30-6-13, 30-6-14, and 30-6-15.)

d. Electrical.

- (1) One-line electrical diagram for the main distribution system.
- (2) Basic riser diagrams for electrical and signal systems. Diagrams for elevator hoistway lights, exit lights, and stairway lights for buildings having four floors or more.
- (3) Layout of typical areas for underfloor raceway systems and method of terminating in closets.
- (4) Preliminary schedules of electrical switchboard and distribution panels.
- (5) Lighting fixture, switching arrangement of typical areas.
- (6) Typical layout of clock and receptacle outlets in permanent construction.
- (7) A letter from the power company which states their specific requirements, recommendations, approximate service voltage gradient, and the available interrupting capacity at the building site. In addition, the power company should include a one-line diagram showing substations and medium-voltage feeders for buildings which require primary service, together with appropriate excerpts from the dispatcher's log of outages that occurred in the previous year.

e. Illumination.

- (1) Lighting-fixture pattern for all areas, including exterior lighting at entrances, parking areas, etc.
- (2) Indication where luminous or louvered ceilings are planned, showing general design of the equipment.
- (3) Indication of wattage of incandescent lighting fixtures in typical areas.

f. Elevators, Materials Handling Equipment, Etc.

- (1) Plan ($\frac{1}{4}" = 1'-0"$) of elevators, showing typical floors served; typical floors in blind portions of hoistway, if any; elevator pits; secondary levels, and machine rooms with access thereto. Plan should include platform size, counterweight space, door space, and clearance dimensions.

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- (2) Sections ($\frac{1}{4}" = 1' - 0"$) through elevator hoistways, pits, secondary levels, and machine rooms. Runby dimensions should also be shown.
- (3) Hoistway vents for elevator hoistways serving four or more floors.
- (4) Trolley beams, trap doors, or other provisions for removal of components of elevator equipment from elevator machine rooms.
- (5) Supports for elevator machine beams, elevator dead end hitch beams, and escalator trusses. Elevator machine and hitch beams should rest on their support beams rather than frame into the support beams.
- (6) Elevations of elevator entrances at typical and nontypical floors, showing signal fixtures; also elevation of elevator starter's indicator and control panels.
- (7) Special elevator cabs and special hoistway entrances, if authorized.
- (8) Plan and sections ($\frac{1}{4}" = 1' - 0"$) of escalators, adjustable loading ramps, scales, and conveyors, showing clearances.
- (9) Diagrammatic layout of pneumatic-tube system, showing exhausters, air lines, and central transfer equipment. Floor plan should show tube runs, station locations, and details of stations.
- (10) Power-operated doors, control system, and space for door operators.
- (11) Diagrammatic drawings of power-operated, window-washing scaffold (if any) including roof car, working platform, and limiting dimensions. Details should be included of roof track and guide track system in face of building, where provided. Wheel loading on roof track, and forces transmitted into building where angulated suspension is provided, shall be indicated.

11. COMPLETENESS OF DRAWINGS. The description and checklists do not necessarily include all of the items which may be needed for an adequate check of the intermediate working drawings. The items submitted at this stage will benefit from a review by PBS before they are translated into the final working drawings. The drawings should

not be completely detailed except where the degree of completeness is defined as in "Wall Sections" since labor is wasted if the drawings prove to be unacceptable. They must, however, be complete enough to permit a detailed estimate of cost.

12. FINISH SCHEDULE. A tentative finish schedule is required at this stage. The drawings must include notes or indications of the exterior and interior materials which were specified in the approved project directive.
13. ACOUSTICAL ANALYSIS. Where a building contains special assembly rooms such as courtrooms and auditoriums, an acoustical analysis of such spaces shall be submitted with the intermediate working drawings.
14. INTERMEDIATE WORKING DRAWING PRINTS. Unless otherwise required by the contract, one set of sepia reproductions is required of the contract architect-engineer for Central Office projects. The kind of prints and the number of sets required for regional projects will be determined by the region.
15. ESTIMATE OF COST. With this submission an updated estimate of cost is required. This should comprise GSA forms 123a, 123c and 123d, of the project directive, submitted in triplicate. Reservations to be carried should be shown and also any adjustment of the cost estimate previously submitted with the tentative sketches.
16. SPECIFICATIONS. At this stage the contract architect-engineer shall submit one copy of a rough draft of the specification. The guide specifications previously furnished shall be edited and tailored to the project by deletions or additions. Fly-leaves for material and workmanship proposed for insertion shall be clipped in the appropriate sections. PBS will review the specification and comment on, or point out, irregularities which are inconsistent with Government policies. The reviewed copy will be returned to the contract architect-engineer for completion. This will form the basis for formulation of the final typed specifications.

CHAPTER 9.
FINAL
WORKING DRAWINGS

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CHAPTER 9. FINAL WORKING DRAWINGS

1. SCOPE. The intermediate working drawings, when completed and approved, become the final working drawings. They include all the architectural and engineering drawings and schedules. This chapter deals primarily with the architectural working drawings; but the general instructions apply also to the structural, mechanical and electrical working drawings. See the PBS Handbooks "Structural Engineering" and "Mechanical and Electrical Engineering."
2. TRACING LINEN. Tracing linen of good quality and transparency or an approved plastic film shall be used so that sharply defined blue-prints can be produced.
3. PRINTS. For Central Office projects, PBS generally requires one set of sepia reproducible of the final working drawings for review. The requirements for regional projects will be determined by the region. The prints are reviewed and returned to the contract architect-engineer with approval in writing, for any necessary corrections.
4. ORIGINAL TRACINGS OR REPRODUCIBLES. After these are revised to include any necessary corrections indicated on the returned approved prints, the original tracings or best quality reproducible shall be submitted. The original tracings shall be ink on ink linen or a set of reproducible comparable to ink on ink linen. If reproducible are to be used, a sample must be submitted for approval. Tracings or reproducible not capable of producing clear prints will be rejected.
5. SPECIFICATIONS. The specifications should be prepared on letter-size, 8" x 10-1/2" bond paper, typed double-spaced on one side only. An original and four copies are required; mimeographed or multilith copies will be satisfactory. The specifications should be bound on the left side in such a manner that the set may be easily disassembled. The sections on construction should be kept separate from sections pertaining to mechanical and electrical equipment and installation, and should follow the format furnished by PBS.
6. COMPONENTS OF THE FINAL WORKING DRAWINGS. These are as follows:
 - a. Cover and Index Sheet.

b. General Drawings:

- | | |
|----------------------------------|---------------------------------------|
| (1) Surveys | (8) Lookout System (separate plan) |
| (2) Test Borings | (9) Mezzanines (if any) |
| (3) Site Plan | (10) Second Floor |
| (4) Grading Plan (when needed) | (11) Other Floors |
| (5) Basement (also sub-basement) | (12) Roof Plan |
| (6) Ground Floor (if any) | (13) Elevations, Sections and Details |
| (7) First Floor | |

c. Other Drawings:

- | | |
|----------------------|----------------------|
| (1) Schedules | (5) Structural |
| (2) Exterior Details | (6) Mechanical |
| (3) Interior Details | (7) Electrical |
| (4) Landscaping | (8) Standard Details |

7. PLACEMENT OF DRAWINGS ON SHEETS.

a. General. The drawings should be arranged on the sheets with economical use of space without crowding or overlapping.

b. Composition. Drawings frequently can be composed. If so, the different groups should be divided by separation lines (see Design Data 28-1-4). For instance, the exterior wall sections are separated from the interior details and the plans from the elevations if both are shown on the same sheet. For small projects where such composition of drawings is feasible, the numbering system, which normally requires separate sheets and numbers for each class of drawings may be modified.

c. Floor Plans. One or more floor plans may be put on a sheet, depending on the size of the project. If the entire project is shown on one sheet, or if plans and elevations are drawn on the same sheet, the plans are placed at the bottom.

d. Elevations and Sections. Several elevations and sections may be put on one sheet as long as it is not crowded and is easily read. The front elevation is put on the first sheet, then the other elevations and the sections may be arranged for clarity and economy.

8. GENERAL NOTES. General notes for all classes of drawings are put on the first sheet of each series, in the note panel at the right. They should be kept to a minimum. On the other sheets of the same series these general notes may be referred to as necessary, without repeating them. General notes should not be scattered over the drawings.

9. ABBREVIATIONS. These may be used whenever possible to save space and labor. An architectural abbreviation that is not in Standard Detail 6-1-2 should not be used unless it is self-explanatory or unless the standard detail is modified to include it.

10. HATCHING.

a. On areas of drawings where hatching is needed to indicate the material, only enough area to show clearly the type of the material should be hatched. (see standard detail 6-1-1).

b. Where hatching is used to indicate the extent or scope of the work, the entire area involved shall be hatched on the reverse side of the drawing.

11. NOTING STANDARD DETAILS. The abbreviation "S.D." followed by the proper number should be noted at the point on working drawings where there is indicated any item for which PBS has prepared a standard detail. A witness mark to point out the item shall be used. The latest standard detail number including the latest revised suffix letter should be verified and used. Canceled standard details shall not be used or referred to by number.

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12. DETAIL AND DRAWING REFERENCES.

a. For symbols and method of identifying details, see Design Data 28-1-4.

b. When a large scale drawing of a major element such as a stairway has been made, it should be referenced at the stairway on the floor plan thus: "See Drawing No. 5-8".

13. CHANGE IN APPROVED DIRECTIVE. At this stage the architect may decide that some departure from the approved project directive must be made. The change should be described on GSA Form 124, and submitted to PBS for review and approval before incorporating in the drawings.

14. COVER SHEET WITH INDEX.

a. A Cover and Index Sheet, dwg. no. 0-1 of the same size as the drawings must be provided. On this sheet is put an index of all final working drawings, arranged in numerical sequence. PBS will supply a linen sheet for this, on which the title block and some of the captions are printed (see specimen Cover Sheet, dwg. no. 0-1, appendix D).

b. The index is divided into groups under these general headings:

ARCHITECTURAL

STRUCTURAL

MECHANICAL

STANDARD DETAILS, Architectural, Structural, Mechanical

NOTE: The term "Mechanical" includes electrical.

c. All major drawings should be listed by number and title under their particular headings.

d. Standard details used shall be listed by number, with suffix letter if any, in the column provided for them. The inclusion of the suffix letter is to insure that the standard detail noted on the drawings is identical with the one used in the design. Structural standard details used must be listed also on the first structural drawing (No. 7-1).

e. When a standard detail is modified, the number with its suffix letter and the abbreviation "MOD" after it, should be listed in the space headed MODIFICATIONS TO BE MADE BY THE CONTRACTOR, and also included on all other working drawings. The modification should be explained, or, if covered by a partial detail, reference should be made to the partial detail.

15. TOPOGRAPHIC SURVEY. A print of the survey is inserted as the first drawing in each set of final working drawings.

16. SITE AND GRADING PLANS.

a. General. These must show all of the site involved and must establish the limits of the contract. They also must show as much of the adjoining area as needed to indicate fire clearance in congested districts; in open districts they must show approach roads, relationship to other buildings on the site, etc. The ground plan of the building on the site plan must be oriented in the same way as the floor plans, so that the building entrance will face the same side of the sheet on all plans.

b. Scale. For larger projects, 1" = 50' -0" is usually best suited. For projects requiring larger scale to explain the work satisfactorily, 1" = 40' -0", 1" = 10' -0" may be used, provided uniform sheet size is maintained. For projects consisting of one building with driveway and walks, 1/8" or 1/16" scale may be used, depending upon the size of the building and the size of the site.

c. For a Single Building. If a single building with driveway and walks is being drawn, such as a post office or a courthouse, the site plan and grading data shall be put on the same sheet.

d. For Several Buildings. For projects comprising several buildings with a road system, such as a hospital group, the site plan and the grading plan are put on separate sheets. On very large projects, both the site plan and the grading plan may be divided into sectional sheets to keep within the established sheet size.

e. Road Curve Data. This and other elements concerning the location and layout of the work are shown on the site plan.

f. Contours and Grading. The contours of existing topography, new grading and other data about the grading shall be shown on the grading plan. Contours are indicated in brown ink on the reverse side of the sheet. Existing contours are indicated by dotted lines; finish contours are shown solid.

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g. Demolition and Clearing of Site. If this cannot be clearly shown on the site plan, a separate plan should be prepared. On this should be indicated and noted the extent of the work, such as removal of existing buildings, filling of old foundations, removal of trees, etc.

h. Standard Details. Standard details are to be used wherever applicable.

i. Special Details. Special details should be placed on the site plan drawing where space is available; otherwise, additional sheets may be used. When special details are placed on the site plan drawing, they should be kept at the left of the sheet; and the site plan at the right of the sheet. The two drawing areas should be divided by separation lines (see Design Data 28-1-4).

17. FLOOR PLANS.

a. Requirements. A separate plan shall be drawn for each floor of a building, except that where floors are identical architecturally, they may be shown on a typical floor plan. Typical floor plans for mechanical and electrical work are generally not permitted. (See chap. 2-3 of the Mechanical and Electrical Engineering Handbook).

b. Scale.

(1) Architectural. A scale of 1/16", 1/8", or 1/4" may be selected. To meet special conditions, a 1/32" scale may be used if prior approval is obtained. Generally, 1/8" is preferred, but the nature of the project may require one of the other scales.

(2) Mechanical and Electrical. A scale smaller than 1/8" shall not be used without prior approval. (See chap. 2-3 of the Mechanical and Electrical Handbook.)

18. PARTITIONS. Movable partitions in general office space over 5000 square feet shall not be shown on floor plans. However, Schedule Drawing 5-1 shall note the estimated linear feet of movable partitions, the number of doors, the hardware items, as well as electrical devices of each kind, such as switches, convenience outlets, clock outlets, telephone outlets, etc. The estimated quantities shall be based on the approved tentative sketches, with 20% added to all quantities. (See Design Data 28-30-52.)

19. NUMBERING EXTERIOR DOOR OPENINGS.

a. Exterior door openings shall be numbered on final working drawings as follows:

Basement	$\frac{B}{1}$	$\frac{B}{2}$	$\frac{B}{3}$	etc.
Ground Floor	$\frac{G}{1}$	$\frac{G}{2}$	$\frac{G}{3}$	etc.
First Floor	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{1}{3}$	etc.
Penthouse	$\frac{P}{1}$	$\frac{P}{2}$	$\frac{P}{3}$	etc.

b. The numbering shall start with the "main entrance" and proceed counterclockwise around the building.

c. Preferably, the numbers shall be placed on the center of the entrance doors (Design Data 28-1-9). The numbers shall be shown on the plans only; they need not be shown on the elevations or small scale sections, except when a number is needed for clarity or identification.

20. NUMBERING INTERIOR SPACES.

a. Space numbers should be assigned to each space on each floor. The first digit or letter denotes the floor.

b. The following system is to be used:

B-1, B-2, etc.	for basement spaces
G-1, G-2, etc.	" ground floor spaces
101, 102, etc.	" first floor spaces
M-101, M-102, etc.	" mezzanine spaces above first floor
P-901, P-902, etc.	" penthouse spaces in 8-story building
P-1001, P-1002, etc.	" penthouse spaces in 9-story building

c. Space numbers are assigned to stairways and escalators at each floor level, except that if a stairway or escalator is treated uniformly throughout in finish and color, space numbers need not be assigned.

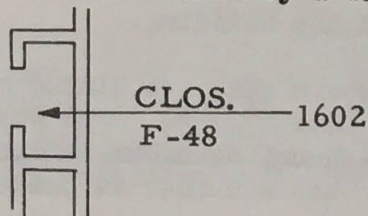
21. TITLES OF SPACES.

a. Designated Spaces. In the center of each space should be noted its name, its space number, and its finish number, as

COURTROOM

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b. Outside Reference. If the room or space is too small to contain these three items, they should be put in a clear area outside the room or space and reference indicated by a witness mark, thus:



c. Unassigned Spaces. Unassigned space is noted as "Reserved" and when appropriate its use is also noted as "Reserved (Office)," "Reserved (Storage)," etc.

d. Office Space. Spaces to be used for office purposes and which can be reassigned, are noted "Office". If movable partitions are not shown on the floor plans, the office space is designated as "General Office Space."

e. Post Office Facilities. In Federal buildings containing space for post office swing, locker and toilet rooms, these shall only be designated on floor plans by the following room titles as appropriate:

- "Men's Swing Room"
- "Men's Locker Room"
- "Men's Swing and Locker Room"
- "Men's Toilet" or "Men"
- "Women's Swing Room"
- "Women's Locker Room"
- "Women's Rest Room"
- "Women's Toilet" or "Women"

When more than one room of the above is required in other locations in the building, they shall be further identified on the floor plans by appropriate room numbers.

22. ROOF PLANS.

a. Requirements. For roofs having high and low points the plan should show the elevations of these points above the roof slab or the top floor.

b. Scale. A roof plan is usually so simple that a scale smaller than that of the floor plans can be used.

23. ELEVATIONS AND SECTIONS.

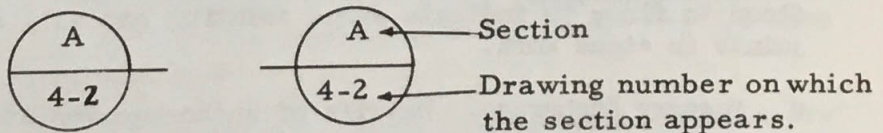
a. Scale. Same scale as for the floor plans.

b. Building Material on Elevations. The extent of each material should be indicated clearly on the elevations. (The complete description of materials and finishes is given on separate schedule sheets.)

c. Cutting Plane for Longitudinal and Transverse Sections.

(1) A plane that cuts through the most important rooms and permits showing maximum information should be chosen. On the section all applicable data in the checklist should be shown. In addition to this complete section, other complete or fragmentary sections needed for clarity may be shown.

(2) The points through which the longitudinal or transverse section has been taken shall be indicated on the related floor plan thus:



On sheet 4-2 the title under the section shall be as follows:

LONGITUDINAL SECTION A-A (3-1)

(3) This system furnishes a two-way reference between sheet 3-1 on which the section was cut and sheet 4-2 on which the section appears.

24. DETAIL DRAWINGS. It is very costly to step up scales from $\frac{1}{4}"$ to $\frac{3}{4}"$ to $3"$, and show the same detail completely at each scale. The detail should be shown completely only at the largest scale used for it; at scales smaller than this it should be shown only in silhouette. Any information the contractor needs should not be omitted but the drafting should be reduced as much as possible by using schedules and standard details. Gradual "stepping up" should be avoided by going directly from the basic scale to the largest scale needed.
25. EXTERIOR DETAILS.
- a. Requirements. The scale details needed should be provided to explain fully the exterior architectural work and to show how it connects with the structural work. Head, jamb, and sill details of exterior door and window openings are required, as well as exterior wall sections at openings and between openings. Other important architectural features should also be detailed.
 - b. Scales. A $\frac{3}{4}"$ scale is ordinarily used. If clear enough, a $\frac{1}{4}"$ scale for simple details or explanatory drawings is satisfactory. Special features should be detailed at $3"$ scale for clarity; but only fragments of these may be necessary. For example, windows and doors and their frames (except standard metal windows and doors) should be detailed at $3"$ scale. The $\frac{3}{8}"$ scale shall not be used.
 - c. Wall Sections. PBS needs complete wall sections of important walls from the top member to the lowest floor level; but these may be compressed to eliminate unnecessary drafting between floor levels, or between heads and sills of windows.
 - d. Stone Jointing. It may be necessary to show the full height from floor to floor to indicate stone jointing and sill alignment with joints in stone work.
 - e. Masonry Anchorage. Details of anchorage for stone, brick, etc., shall be shown. Anchorage shall be developed by structural engineers of the contract architect-engineer or by a structural engineer consultant.
 - f. Partial Elevations. Sections through windows or other openings shall be accompanied on the same sheet with partial elevations and plan sections at the same scale, showing adjacent work including jointing, anchors, bonding, etc. (See Design Data 28-1-41.)

g. Title Letters. A spacing diagram and details for title letters, as shown on Design Data 28-2-1 and 28-2-7, shall be included on the final working drawings.

26. INTERIOR DETAILS.

a. General. Details of all interior architectural work that cannot be explained adequately by notes or in the "Schedules" of materials and finishes should be provided. Spaces involving special architectural treatment, such as lobbies, courtrooms, libraries, etc., shall be completely detailed. For ordinary rooms and spaces that can be fully covered in the Schedule, only typical plans and details are needed. Interior doors of special design shall be detailed and individually numbered.

(1) Counterline. Post office countertop units shall be shown and dimensioned in accordance with the approved tentative sketches. Cabinets under counters are furnished by the Government for installation by the construction contractor (see Design Data 28-9-56 and 28-30-50).

(2) Screenline. A plan and elevation showing the dimensions of the clear openings required for P.O. lock boxes shall be shown in accordance with the approved tentative sketches. Lock box nestings, drop units, and blank panels are furnished by the Government for installation by the construction contractor (see Design Data 28-9-57 and 28-30-50).

b. Scales.

(1) Interior elevations. These generally are to $\frac{1}{4}$ " scale. Parts or sections may need to be at $\frac{3}{4}$ ", $1\frac{1}{2}$ ", or 3" scale. Window and door frame details are drawn to $1\frac{1}{2}$ " or 3" scale. Details at this scale do not need more than governing dimensions. The $\frac{3}{8}$ inch scale should not be used.

(2) Construction Information. Since the full-size details are limited to line elevations and contours, all necessary construction information should be shown in the detail drawings at $\frac{3}{4}$ " or 3" scale.

(3) Architecturally Treated Spaces. A $\frac{1}{4}$ " scale is ordinarily used (if plans are at smaller scale than this) to show spaces that need special architectural treatment such as lobbies, courtrooms, libraries, etc., also for interior elevations and sections. Parts of these may have to be enlarged to $\frac{3}{4}$ " scale, and parts of the

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3/4" details to 3" scale. For example, a partial floor plan and interior elevations of a courtroom might be made at $\frac{1}{4}$ "; sections through the wainscoting, door jambs, and other parts at 3/4"; and perhaps a cornice, at 3" scale.

(4) Toilets. If plans are at 1/8" scale or smaller, toilets are shown at $\frac{1}{4}$ " scale, to indicate location of fixtures and to give other necessary information. (Ordinarily, this does not apply to private toilets.)

(5) Explanatory Plan. While developing the interior elevation and details, a plan of all or part of the space may be needed.

(6) Contours and Mouldings. It is useless to draw these at less than full-size.

(7) Stairways. Stairways shall be fully detailed and all basic dimensions and necessary enlarged details shall be provided. Riser and tread dimensions shall be computed in accordance with Design Data 28-8-1 and 2.

27. SCHEDULES.

a. Status of "Schedule" Drawings. The General Conditions of the contract specifications state that "schedules on drawings shall take precedence over any conflicting notations on the drawings." It is therefore important that schedules be accurately prepared to insure that the finish or material desired is obtained.

b. Finish Schedule Guide Sheets. To help the architect in preparing the schedules of finishes, materials, colors, and other items, PBS furnishes finish schedule guide sheets. These contain detailed information about materials and finishes, and show how each should be entered on the large schedule drawing. The guide sheets also serve as checklists to help make the schedules complete. They are found in the Design Data 28-30 series. (See samples in appendix E.)

c. Schedule Drawing (No. 5-1 Series). PBS furnishes (partially filled in) a working drawing size sheet of "Schedules, Architectural" (Drawing no. 5-1). A copy of this, filled in with the entries for the imaginary building at Clawson, Iowa, will be found in appendix D. The applicable entries are filled in with pencil on a print of this sheet in the manner described below. After checking to make sure all entries are correct and complete, the schedules are copied on the

linen sheet of final working drawing size. For some projects, several schedule sheets will be needed. They are final working drawings and are always numbered 5-1, 5-2, etc. In sequence they come immediately before the Architectural Scale Details.

d. List of Schedules. Some of the schedules below may not apply to a particular project. If not, they should be omitted. Other schedules not listed here may be needed. If so, they are penciled on a worksheet and copied on the schedule drawing with an appropriate heading. The schedules are:

Interior Finish

Interior Materials

Exterior Materials

Glass (Design Data 28-30-13)

Items Furnished by the Government and Installed by the Contractor.
(See Design Data 28-30-50.)

Items Not in Contract (furnished under separate contracts).
(See Design Data 28-30-50.)

Movable Partitions (Design Data 28-30-52)

Steel Lined Vaults (Design Data 28-30-54)

Venetian Blinds (Design Data 28-30-53)

Interior and Exterior Paint and Color (including varnish, enamel, stain, factory finish, etc., with their color).

Alternates (Design Data 28-30-50)

Additional Drawings to be Furnished Contractor (Design Data 28-30-50)

e. Other Schedules.

(1) Special Details. Schedules of items that must be accompanied by detail drawings, such as special signs or special doors, shall be put on the same sheet as the detail drawings, and the sheet numbered in the 5-series.

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(2) Doors. Provide a door schedule for all exterior and special doors. This door schedule shall state type, material, size, and the number and drawing location of head, jambs, and/or sill details for each door.

(3) Models. All models are entered on "Model Schedule (Architectural)" and "Model Schedule (Sculptural)" - examples are included in appendix A. Models should not be put on the large Schedule Sheet.

28. HOW TO FILL IN SCHEDULES.

a. Interior Finish Schedule.

(1) Space Name. The space names are first filled in. If there are several spaces with the same name but different finishes, the spaces that have the particular finish are identified by adding the space to the name, as "Toilets - 208, 223, 226".

(2) Finish Numbers. After entering the finish number, the same number is noted in the applicable room or space on the floor plans.

(3) Remarks. If the complete space finish cannot be fully explained by entries after the typical elements, the necessary information is added under "Remarks".

(4) Items. All materials are entered in the vertical column to the right of the items, but the numbers in the squares at the right are omitted until later.

b. Interior Materials.

(1) It has been found convenient to list the elements that apply to a particular material on a sheet of tablet paper. These elements and their proper entries are shown on design data in 28-30 series, entitled "Finish Schedule Guide Sheets". The sheets must be followed. If there is no design data sheet for the material being described, a schedule in the same style used for the design data sheets should be prepared.

(2) The material should be given a number in the $\frac{1}{8}$ " box in the "Interior Materials" schedule. Below is a list of certain items and finishes that are covered by the specifications. When one of

these is used an "X" should be put in the $\frac{1}{4}$ " square at the right of the entry in the "Interior Finish Schedule". It should not be listed in the "Interior Materials" schedule.

(3) When all of the materials have been scheduled on tablet paper, they are copied on the working drawing schedules (no. 5 series), under the caption "Interior Materials".

c. Exterior Materials. Exterior schedules on the final working drawing schedule also may be filled in on tablet paper before copying them on the drawing.

d. Material Covered by Specifications. The following items are not to be scheduled under "Interior Materials" or "Exterior Materials". They are covered by the specifications.

- Asphalt Industrial Flooring Tile (for P.O. Workroom)
- Cement
- Concrete Masonry Units
- Cork Carpet (for Lookout Gallery Flooring)
- Hardware
- Structural Tile, other than Structural Facing Tile
- Thresholds
- Painted Building (Common) Brick

e. Other Schedules. (Except Paint and Color). Other schedules on the final working drawing schedule also should be filled in as described above.

29. PAIN T AND COLOR SCHEDULES.

a. General. The manner of listing paint and color schedules is shown by a specimen layout on drawing 5-2, appendix D. The paint and color schedules are ordinarily laid out on the last sheet in the series of schedules sheets. For a small building, one sheet may be enough to show all of the schedules. For a very large building, the schedules of materials and finishes may completely fill sheet 5-1 and continue on to one or more additional sheets. The paint and color schedules should follow the other schedules without a break.

b. Federal Standard 595, Colors. The purpose of this standard is to present in convenient form a collection of standard colors currently used by the various departments of the Federal government. For procurement, inspection, and other color matching purposes, color chips are issued as a supplement. These chips are identified by 5-digit numbers and are defined by fundamental colorimetric data.

(1) Color/Classification. The colors have been classified into three main groups depending upon the specular gloss. These three groups are designated gloss, semi-gloss, and lusterless (or flat). A color may appear in more than one of the color groups. Within each gloss group, the colors are further arranged in 8 arbitrarily selected color classification groups and within the latter groups in the order of approximate increasing diffuse reflectance. The eight color groups are brown, red, orange, yellow, green, blue, gray, and miscellaneous.

(2) Numbering System. The 5-digit numbering system used for the colors is based on the assignment of numerals which indicate the following:

The first digit indicates the gloss of a color:

1 - gloss; 2 - semi-gloss; 3 - lusterless.

The second digit indicates the selected color classification, 0 for brown, 1 for red, 2 for orange, 3 for yellow, 4 for green, 5 for blue, 6 for gray, and 7 for miscellaneous. The last three digits indicate the approximate order of increasing diffuse reflectance and are assigned nonconsecutively to provide numbers between the colors for future use. The higher the last three numbers, the greater the amount of diffuse reflectance. When a color appears in more than one gloss range the last four digits will be the same: for example, numbers 16555, 26555 and 36555 identify a light gray color in all three gloss ranges.

c. Standard Interior Color Schemes.

(1) Interior color schemes for rooms and spaces in Federal buildings are shown on Standard Detail 6-50-1. Design Data 28-31-1 explains how to apply these color schemes and how to put the information on the working drawing schedule sheet.

(2) The General Color Instruction (Standard Detail 6-50-2) gives the standard treatment for subsidiary features of an interior space, such as beams, niches, wall cabinets and the like. The painter will follow these standard instructions, unless the architect modifies by a note in the column headed "Modifications". (See drawing 5-2 in appendix D.) Standard Detail 6-50-2 shall always be referred to in the Interior Paint and Color Schedule.

d. Interior Paint and Color Schedule.

(1) Standard Color Schemes. The example (drawing 5-2) is largely self-explanatory. Under "Modifications" should be noted any deviation from the instructions given in Standard Detail 6-50-1 and in the General Color Instructions, Standard Detail 6-50-2.

(2) Special Color Schemes. After completing the listing of general spaces, with their related standard detail numbers, any spaces that require special treatment should be listed.

e. Exterior Paint and Color Schedule. The items that apply are listed with the related Federal Standard color number for each item, as shown on the example drawing 5-2 in appendix D. If an item has two or more colors, the extent of which cannot be described, a detail drawing that explains the extent of each should be made. Below is a partial checklist of exterior items for paint and color:

Antennae Supports	Light Brackets
Ash Hoists	Light Shaft or Well
Beams	Lintels (Metal)
Brickwork (if painted)	Marquee Soffits
Bumper and Protection for	Marquee Fascias
Mailing Platform	Observation Tower
Canopy Soffits	Penthouse
Canopy Fascias	Porch
Columns (Metal), (Wood)	Porch Soffit
Column Protection (Metal)	Porch Roof (Metal)
Concrete	Rafters
C.M.U.	Railings (Wood)
Copings	Railings (W.I. or C.I.)
Cornice	Roof (Metal, Steep)
Cornice Soffit	Scuttles
Cupola	Seats
Cupola Roof	Shutters
Doors and Frames (Access)	Siding
Doors and Frames (Coal)	Skylights
Doors and Frames (Fire)	Stack
Doors, Frames (Typical)	Stack Cap
Doors, Frames and Protection	Steps on Roof
for Mailing Platform	Spandrels
Downspouts	Transoms
Downspout Conductor Heads	Ventilating Louvers
Downspout Shoes	Ventilators (Roof)

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Fascia Boards	Vents (Attic Wall)
Fences and Gates	Vents (Foundation Wall)
Fence Caps (Wood)	Vestibules
Fire Escapes	Weather Vane
Flagpole Base	Wheel Guards
Flagpole Shaft and Cleats	Windows and Frames (Coal)
Flashings: (Lead-Coated)	Windows and Frames (Dormer)
(Zinc-Coated)	Windows and Frames (Typical)
Floodlight Standards	Windows and Frames at Mailing
Gratings (Areaway)	Platform
Grilles	
Gutters (Hanging)	All Other Wood
Ladders	All Other Ferrous Metal
Lamps and Standards	
Lattice	
Lettering (Special)	

f. Natural Finished Wood. A "natural finish" on wood is any finish which shows the grain of the wood. For natural finished wood, the species, the cut and character of grain of veneers and the grain of solid sections are scheduled in the "Interior Materials" schedule in accordance with instructions in the Finish Schedule Guide Sheets. However, to assure that the required staining and varnishing are included, the words "natural finish", plus the species of wood, are noted in the Paint and Color Schedule. The type and number of coats and the applications between coats are stated in the specification. To assure that the desired finished appearance is obtained, physical samples are to be kept on file in the office of the contract architect-engineer.

30. MECHANICAL-ELECTRICAL. The completed working drawings submission should be accurate and complete and the drawings and specifications should have been checked and coordinated. The submission should include the following:

a. Items required under the final working drawings and specifications submission of the GSA handbook "Instructions to Contract Architects and Engineers".

b. Complete plumbing, heating, airconditioning, and electrical calculations. Heating and airconditioning calculations must be made by rooms or bays and submitted on Design Data drawings nos. 30-3-8 and 30-6-9, or on other forms containing the same information.

c. The identification by name and number of all rooms and areas on all floors, corresponding to the identifications on the architectural drawings.

PAR 30

CHAPTER 10.
CHECKLISTS FOR FINAL
WORKING DRAWINGS

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CHAPTER 10. CHECKLISTS FOR FINAL WORKING DRAWINGS

1. COVERAGE. The checklists for the Final Working Drawings are extensive. Not all of the items listed will apply to every building; the architect-engineer is still responsible for the completeness of his drawings.
2. DEFINITION. The word "shown" as used in the check lists means drawn, sketched, detailed, noted, etc., on the drawings.
3. ALPHABETICAL ARRANGEMENT. Generally, checking items are listed alphabetically under the noun, not the qualifying adjective. (For Loading Platform or Mailing Platform, see "Platforms".) But when the qualifying word is the significant factor, it is used as the alphabetical key. (Lookout Gallery is under L, not under G; Swing Room is under S, not under R.)
4. ABBREVIATIONS IN PARENTHESES.
 - a. In the checklists, "S.D." and "Des. Data" mean respectively that PBS has a Standard Detail or a Design Data Drawing of the item. The architect-engineer should always refer to the Design Data Drawing or use the Standard Detail.
 - b. "Spec. Det." means that a special detail must be drawn on the item.
 - c. If "S.D." and "Spec. Det." both appear after a listing, the notation "Spec. Det." applies only if the space is architecturally significant, or if an unusual condition must be explained by detailing the item. In the ordinary cases, the Standard Detail is sufficient and a special detail need not be made.
5. CHECKLIST FOR SITE PLAN.

Alley: (Note) Dimension the width. Note material
Public (Note)
Private (Note)
Angles of Property Lines
Areaways: (Note) Elevation of top wall
Ash Hoist: (Note)
Auto Parking Areas: Note material
Back Fill, for old excavations, etc. (Note)
Bridges: (Note)
Buildings:
New (use heavy outline)

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Existing:

To remain (Outline only) Note "Existing building to remain"

To be removed (Broken outline only)

Under separate contract: Note "Existing building to be removed, N.I.C" Note extent

Previously removed: Indicate by dotted lines that part within outline of new building. Note "Previously removed" or "Present foundations of building previously removed". Note extent of remaining work to be removed.

Bumpers (Note "Bumper")

Parking Areas (S.D. 6-2-26)

Platform (S.D. 6-8-3)

Catch Basin: Note "C.B.", elevation to top, and Standard Detail

Curb (S.D. 6-2-28, 29)

Driveway (S.D. 6-2-15, 16)

Lawn: (S.D. 6-2-15, 16) modified

Sub-drainage system (S.D. 8-2-2)

Cleanouts for sub-drainage system (Note) (S.D. 8-2-3)

Coal Hole: (Note) (S.D. 6-9-5)

Compass: Locate (Des. Data 28-1-4)

Construction Engineer's Office. Determination to be made by P.B.S. (Note) (S.D. 6-2-30, 31, 32, 33, 34, 35, and 36)

Construction Sign (S.D. 6-4-1)

Curbs: Note "Present" or "New," material, top and gutter elevations, and radii of all curbs

Driveway (S.D. 6-2-5)

Lot (S.D. 6-2-5)

Road (S.D. 6-2-6, 7)

Street (S.D. 6-2-6, 7)

Trucking Area (S.D. 6-2-5)

Details: Locate at left of sheet; use additional sheet if necessary.

Dimension:

Loading platform, front and ends, to opposite limits of paving or trucking area

Overall (buildings)

Property lines (from survey)

Internal angles (in degrees, from survey)

Property lines to building, at first story

Property lines to street curbs

Width of driveways

Width of walks

Docks: (Note)
Drains: (Note)
Driveways: (Note) Note material
Catch Basin (S.D. 6-2-15)
Catch Basin for Storm-Sewer (S.D. 6-2-16)
Curves, note radii (unless given under "curbs")
Construction details (S.D. 6-2-5 and 6-2-8)
Entrance (S.D. 6-2-3 and 6-2-4)
Elevations: (or grades) (Des. Data 28-1-4)
Driveways, "present" and "new"
Basement Floor: (Note) single underline (within outline of building)
First Floor: (Note) single underline (within outline of building)
Bench Mark (Note "B.M.")
Contours: Indicate generally at 2-foot intervals over ground, walks (if necessary), roads, driveways, parking areas, and paved areas. Indicate contour symbol (Des. Data 28-1-4) in Note Panel
Present (dotted lines)
New (full lines)
Finished grades: (by spot elevations at corners)
Areaway
Building
Driveway
Parking Area
Property
Trucking Area
Spot elevations other than corners
Entrances:
Building: top and bottom of steps (excluding bottom of areaway steps)
Driveway, at street
Walks
High and Low Points:
Catch Basins
Driveways, roads, walks, sidewalks, and curbs
Manholes
Retaining walls, top and bottom
Encroachments: (Note) Dimensions
Fences: (Note)
Present, to remain
Present, to be removed
New (Note height, material)
Fire Hydrants: Note "siamese connection, flush type". If water hydrant is on same wall plate, add "comb. W.H."
Flagpole: (Note "Flagpole") locate by dimensions. Indicate walk if required.

Ground: Note material of base; note type of footing; note
height: (S.D. 6-3-1)
Roof (S.D. 6-3-2); Note height
Roof, tilting (S.D. 6-3-4); Note height
Gates: (Note) (Spec. Det.)
Gratings, areaway (S.D. 6-11-14)
Grass, areas. Note "seeding" or sodding"
Gutters (Note) (S.D. 6-2-4, 6, 11, 12 and 13)
Index of Drawings;
Joints: Contraction (Note "C.J."): Construction (Note "Const. JT.")
Expansion (Note "Exp. JT." or "E.J.")
Driveway (S.D. 6-2-8)
Parkway Area (S.D. 6-2-8)
Retaining Walls (Spec. Det.)
Sidewalk and walk
Trucking Area (S.D. 6-2-8)
Landscape: (Note items in separate contract on site plan)
Architectural planting enclosures, Note "Arch. Plant. Encl."
Lawn Wicket Guard
Shrubs: Same as trees, below
Sodding: (Note)
Tree Pit: (Note)
Trees: General note: "All trees remain unless otherwise noted".
as "Tree to be removed" or "Tree to be stored"
Trees, Fill Treatment
Lawn Faucets: Note "L.F."
Manholes: (Note)
Electric: (S.D. 10-4-2)
Drop Sewer: (S.D. 10-2-15)
Sewer (S.D. 10-2-4)
Names of Avenues and Streets
"Not-in Contract" Items: Note "N.I.C."
Notes, General:
Oil filler Pipe: (Note)
Paved areas: Note material and standard details for construction
and joints
Platforms:
Loading (Note)
Mailing (Note) Standard Types (Des. Data 28-9-28)
Present work to be removed or retained; note extent
Property lines (from survey)
Poles: If necessary to move, note "Pole to be moved by others"
Present (Note)
Government Service (Note)
Radio:
Masts (Note)
Poles (Note)

Towers (Note)
Railings, other than building interior (Note)
Entrance Steps (S.D. 6-10-11)
Pipe Rails (S.D. 6-11-20)
Railroad tracks (Note) (Des. Data 28-9-39)
Ramps: (Note) Note percentage of grade, dimensions, materials,
elevation top and bottom direction.
Driveway
Walk
Wheelchair (Des. data 28-7-2)
Roads:
Center lines (Note)
Construction: (S.D. 6-2-6- 7, 8) (Spec. Det.)
Curve Data
Dimensions
Grades
Joints (see "Joints" above)
Material (Note)
Thickness (Note)
Scale of drawing
Scales, driveway (Note)
Service Pole
Service Lines
Sidewalks
Present, to be removed (Note)(Note extent)
Present, to remain (Note)(Note extent)
New
Joints (see "Joints" above)
Material (Note)
Scorings or pattern (S.D. 6-2-20, 22)
Spot grades
Thickness (Note)
Widths
Splashblocks
Survey, topographic
Standard Details (Note drawing numbers)
Steps (other than building
Brick (S.D. 6-2-21)
Construction
Standard Details (Note) (S.D. 6-2-21, 23)
Special Detail
Direction symbol
Flagstone (S.D. 6-2-23)
Material (Note)
Spot Grades (top and bottom)

Street washer (Note)

Symbols: (Des. Data 28-1-4)

Tanks (Note)

Gasoline (Des. Data 30-10-2)

Oil Des. Data 30-10-3)

Septic (S.D. 10-2-10)

Television:

Masts (Note)

Poles (Note)

Towers (Note)

Title (official) of Building; within building outline

Title Block (fill in) Des. Data 28-1-17 to 28-1-24)

Trucking Areas

Tunnels: (Dotted lines)

Pedestrian (Note (Des. Data 29-2-9)

Service (Note)(Des. Data 29-2-8)

Vehicular (Note)

Tree Pit in sidewalk

Trees, Fill Treatment

Trucking Areas: Note material and standard details for construction

Walks (Note)

Brick (Note) (S.D. 6-2-20)

Concrete, Joints (S.D. 6-2-8)

Flagstone (Note) S.D. 6-2-22)

Material (Note)

Radii of curves (Note)

Steps and Ramps

Spot Grades (Note)

Thickness (Note)

Width

Wall Hydrant: Note "W.H." (See "Fire Hydrant")

Walls, Retaining (Note)

Areaway Details (Des. Data 29-3-5)

Construction (Spec. Det.)

Joints (Note kind)

Spot Grades, top and bottom

Weather Bureau Equipment: (Note)

6. CHECKLIST FOR FLOOR AND ROOF PLANS.

Abbreviations: (S.D. 6-1-2)

Angles, exterior wall: Note if other than 90°

Areaways: (Applies only to plan through areaway) (Des. Data 29-3-5,6)

Dimensions

Drains: (Note) elevation

Floor: (Note) elevation (high points); material

Wall thickness

Ash Dump: (Note)

Ash Hoist:

Gate

Ashpit

Benches: (Note)

Carpenter's (S.D. 6-25-9)

Courtroom (S.D. 6-24-7, 6-24-20, 22, 23)

Detention Cell (Des. Data 28-14-1)

Judges' (6-24-20, 23)

Machinist's (S.D. 6-25-7)

Other (Spec. Det.)

Boiler Entrance, Removable Panel (Des. Data 29-3-6)

Boiler Pit: (Note) (Des. Data 29-3-2, 30-3-1)(S. D. 8-3-2, 8-4-1)

Dimensions; size and location

Elevation

Rail (Note)

Steps (Note)

Waterproofing

Breeching Openings: (See "Chimneys")

Bulletin Boards (S.D. 6-17-1)

Bumpers:

Platform: (S.D. 6-8-3)

Scale (S.D. 10-7-1)

Cabinets: (Note)

Electric (Refer to Mechanical-Electrical drawings)(Note)

Fire Hose: (Note) (S.D. 6-19-2)

First Aid: Note "F.A.C." (S.D. 6-19-4)

Medicine: Note "Med. Cab." (S.D. 6-19-4)

See also under "Fire"

Others: Note kind.

Cages:

Wire mesh partitions (S.D. 6-11-1, 2, 3, 4, 5, 6, 8)

Cant Strip (Note)

Cased Openings: Note width and height

Ceilings, Suspended: Note "Susp. Clg. Hgt. _____, _____" in individual spaces. If heights are uniform note this in General Notes panel. (S.D. 8-8-1) (Spec. Det. if required) (Des. Data 29-2-6)

Cells, detention. (Note "Cell"); indicate benches and fixtures (Des. Data 28-14-1 and S.D. 6-11-11)

Immigration and Naturalization

Marshal (Des. Data 28-15-15) (S.D. 6-11-11)

Chases: (Note); Note size (where necessary for clarity)

Schedule chases in Note Panel on same sheet as Basement Plan with size, height, location, and relation to floor levels.

Chimneys: (S.D. 6-12-7)

Ash Dump (Note)

Breeching Opening; dotted lines (Note "Br. Op'ng.")

Height from floor to center line
Size
Cleanout, note "C.O." and size of door
Dimensions
Lining Material (Note)
Steel Stacks (Note)
Note Diameter
Thermal Insulation (See "Insulation, thermal")
Chutes: (Note) (Spec. Det.) Dimension size and location of floor openings
Baggage
Coal
Dump Hole Door
Letter Mail. Must conform to P.O. Department specifications.
Linen
Mail Handling
Merchandise
Parcel Post (S.D. 10-7-2, 3)
Refuse
Cleanout Door: Note "C.O." and size of door
Clearance:
Door
Equipment
Fixture, lighting (Refer to Mechanical-Electrical Eng. H.B.)
L.O. System (S.D. 6-14- series)
Interior
Under
Marquee (Mailing Platform) (Minimum 14'-0")
Pipe and Duct
Ramp
Stair headroom
Structural
Window, swinging, tilting
Clocks: Locate all skeleton clocks and other architecturally significant clocks on plans and elevations, note size and S.D. numbers. (The Architectural Branch cooperates with the Mechanical-Electrical Branch, to locate these, and all other clock outlets on the Mechanical-Electrical plans.) All clocks are PBS standard electrical, (S.D. 6-18-1, 2, 3, 4)
Closets: (Note "C" or "Clos.") Indicate shelving.
Attorneys' Coats (Des. Data 28-15-4)
Coat, Attorneys' (Des. Data 28-15-4)
Gear Room (Des. Data 28-12-1) (S.D. 6-22-1)

Service (Des. Data 28-12-2) Formerly designated "Janitor"
Floor Receptor (S.D. 6-13-20)

Linen

Wire

Others

Coal Doors: (Note)(S.D. 6-9-3, 4, 6)

Columns: (See Structural Standard Details)

Fireproofing (S.D. 8-7-7)

Furring: (Note)

Number

Protection (S.D. 6-11-10)

Compass: (Des. Data 28-1-4)

Concessions:

Cafeterias: Complete installation, ready for operation.

Snack Bars: Requirements vary, see Project Directive for each building. If project directive requires installation of equipment in construction contract, layout and details are required.

Vending Stands: Cold water(1/2" pipe), valved connection capped inside vending area and necessary electric outlets. Provide 1-20 amp. outlet per drink vending machine.

Conduit (Check for concealment)

Copings: (Note) Note material. Indicate joints.

Cornice: (Note) Indicate on appropriate plan and section.

Counters:

Edgings

Office: (Note) Note material. (S.D. 6-20-6)

Post Office (Des Data 28-9-56) (S.D. 6-16-23, 24)

Other: Note kind.

Courtrooms: (See "Handbook, U.S. Courts")

Cover Sheet

Cricket, roof: (Note) Note material.

Curbs: (Note) if not detailed, note material, width and height

Decks: (Note material)

Roof

Railing (S.D. 6-12-5)

Promenade

Railing (S.D. 6-12-6)

Desks, Lobby: (Note "Desk" Furnished by Government and installed by Contractor, Des. data 28-30-50)

Free-standing

Dimensions: (Des. Data 28-1-5, 8, 9, 10)

Angle (other than 90°)

Balcony

Brickwork (Des. Data 28-1-42)

Column Center
Door Location (Only in architecturally important rooms)
Exterior
Furring: Typical in General Notes; other, note on plan
Opening Location (Only in architecturally important rooms)
Partition
Partition thickness (Typical in General Notes on each sheet;
others, note on plan)
Projection
Plumbing Fixture centers (Des. Data 28-1-6)
Wall thickness (Des. Data 28-1-5, 28-1-42)
Directory Boards: Note "D. Bd." (S.D. 6-17-1)
Corridor
Elevator Lobbies, Passenger (upper floors)
Public Lobby
Doors: Indicate swing (Des. Data. 28-1-5) (Des. Data 28-7-2, 4)
(Note) Hardware Symbol (Des. Data 28-1-5)
Interior: Refer to Des. Data 28-7-3 for requirements as to
location, size, type, etc. Indicate symbol.
(S.D. 6-15-1, 2, 5, 7)
See "Hardware"
Access
Breakout
Cell (S.D. 6-11-11)
Courtroom
Details (S.D. 6-15-2, 5, 7) (Spec. Det.)
Dustproof (S.D. 6-15-24)
Dutch (S.D. 6-15-20)
Elevator (Des. Data 30-5 series) (S.D. 6-15-15, 16, 17, 18,
19, 6-15-26, 27, 28, 29) (Spec. Det.)
Employees Entrance Vestibule (S.D. 6-9-13)
Fuel Room (S.D. 6-15-6)
Jambs (S.D. 6-15-2) (Spec. Det.)
Louver Details (S.D. 6-15-1)
Machine Room Trap (S.D. 6-15-12)
Mailing Vestibule & Frame (S.D. 6-9-26)
Post Office Screenline (Dutch door, S.D. 6-15-20)
Refrigerator (Spec. Det.)
Rolling Steel (Spec. Det.)
Sliding Fire (Spec. Det.)
Special (Note "S" plus serial number) (S.D. 6-15-1 for type only)
Schedule is required.
Standard Interior Door Schedule (S.D. 6-15-1)
Swing
Thresholds (S.D. 6-15-7)
Trap (S.D. 6-15-10)

Trap, Machine Room (S.D. 6-15-12)
Vault, P.O. (S.D. 6-15-21)
Water Closet, Shower and Dressing Room Enclosures
(S.D. 6-13 series)

Wicket

Wire Mesh:

Hinged (S.D. 6-11-3)
Hinged, with wicket (S.D. 6-11-2)
Sliding, (S.D. 6-11-4)
Sliding, with wicket (S.D. 6-11-8)

Other (Spec. Det.)

Exterior: Number (see Chap 9-17)

Coal:

Tilting wall type (S.D. 6-9-4)
Tilting, under platform (S.D. 6-9-3)
Side Hinged, (S.D. 6-9-6)
Employees Entrance (S.D. 6-9-13)
Entrances (Des. Data 28-7-2, 4)
(S.D. 6-15-24) (Spec. Det.)
Hangar (Spec. Det.) (Refer to Mechanical-Electrical drawings)
Mailing Vestibule (S.D. 6-9-26)
Threshold (S.D. 6-15-7)
Other (Spec. Det.)

Downspouts, Exterior: Note size, material, and "D.S."

Drains:

Areaway: Note "A.D."
Floor: Note "F.D."
Gutter: Note "G.D." (S.D. 6-2-11)
Roof: Note "R.D."
Wash Racks (S.D. 10-10-1)

Drinking Fountains: Note "D.F." (Refer to Mechanical-Electrical drawings)

Drops Panel, Post Offices (S.D. 6-16-22) (Des. Data 28-9-57)

Electric Water Cooler: (Note "E.W.C.")

Elevations: (Grades or levels) (Des. Data 28-1-4)

Pits

Ramps: (At top and bottom)

Elevators: (S.D. 6-15-15, 16, 17, 18, 19, 26, 27, 28, 29) (Spec. Det.)

Dimension the shafts (Des. Data 30-5-1, 2, 3, 4, 5, 6)

Dumbwaiters (Note) (Des. Data 30-5-5)

Garage (Des. Data 30-5-4)

Hoistway Vents (Des. Data 28-11-5)

Hospital (S.D. 10-5-3) (Des. Data 30-5-6)

Indicate crossed outline of cabs

Passenger (S.D. 10-5-1, 2) (Des. Data 30-5-2)
P.O. Freight (Des. Data 30-5-1)
Numbering (see chap 6-5)
Sidewalk Lifts (Note)

Enclosures: Dimension: note standard details applicable. (S.D. 6-13 series)

Shower (S.D. 6-13-1, 2, 4, 6, 7)
Water Closet (S.D. 6-13-10, 11, 12, 13, 14, 15, 17, 18, 21, 22, 24)
Urinal (S.D. 6-13-25, 26)
Recessed Towel Cabinet and Waste Receptacle (S.D. 6-13-19)
Recessed soap dispenser (S.D. 6-13-29)
Recessed Towel dispenser, soap dispenser, mirror & shelf (S.D. 6-13-32)
Recessed Soap dispenser and shelf (S.D. 6-13-33)
Recessed Waste receptacle (S.D. 6-13-34)
Recessed feminine napkin dispense (S.D. 6-13-35)
Other (Spec. Det.)

Escalators: (Spec. Det.)

Number each consecutively. Note direction "up" or "down" for normal use.

Exhibit case - Historical Data (S.D. 6-19-8)

Expansion Joints (Note "E.J.")

Finishes:

Fire:

Fire Extinguisher Racks: Note "F.E." (S.D. 6-19-7)

Hose Cabinets: (Only in buildings of four or more stories.)
Note "F.H.C." (S.D. 6-19-2) Note type.

Extinguisher Cabinets: (Use in corridors and architecturally significant locations.) Note "F.E.C." (S.D. 6-19-3)

Extinguisher Recess: Note "F.E.R." (S.D. 6-19-5)

Fireproofing

Finish Number (in rooms and spaces)

Fireplace (Spec. Det.)

Firing Floor: (Note) (Des. Data 30-3-1) Dimension size and location.
(S.D. 8-4-1, 8-3-1, 2)

Flagpole: Note "Flagpole"; locate by dimensions.

Ground: Note material of base; (S.D. 6-3-1); note type of footing; note height.

Roof: Use only if ground pole cannot be provided. (S.D. 6-3-2);
Note height.

Roof: Tilting: Use only if ground pole cannot be provided
(S.D. 6-3-4); note height.

Flashing (Note) (Spec. Det.)

Cap

Coping Cover

Cornice Cover

Roof eaves for flat roofs: (S.D. 6-12-2)
Spandrel

Floors: Indicate pattern, joints, dividing strips, etc. Note material on detail plan and in Schedules of materials and finishes.

Furring: Indicate, and note in General Notes panel in individual drawings.

Column

Wall

Garage: Doors

Gates:

Courtroom railing: (S.D. 6-24-7)

Office railing, steel: (Spec. Det.)

Office railing, wood: (Spec. Det.)

Others: (Spec. Det.)

P.O. Lobby Counter: (S.D. 6-16-24)

Wood Counter: (S.D. 6-20-6)

Gear Rooms: (Des. Data 28-12-1) (S.D. 6-22-1)

Gratings, areaway (S.D. 6-11-14)

Grilles: (Architectural only) (Note)

Detention Cell (S.D. 6-11-11)

Radiator: if special detail is required

Transformer Room

Vent (See "Vault")

Window

Exterior: (Spec. Det.) if architecturally significant

Interior: (S.D. 6-11-15) (Spec. Det.) if architecturally significant

Security Sash

Gutters:

Curbs (S.D. 6-2-6)

Driveway Entrance: (S.D. 6-2-4)

High Point: Note "H.P."

Material

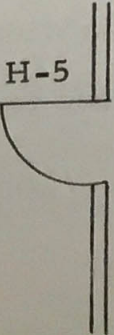
Roof (Spec. Det.)

Sidewalk: (S.D. 6-2-12, 13)

Handrails: (Note) Note material and type. (S.D. 6-10-1, 2, 11)
(Des. Data 28-8-5) (Spec. Det.) See also under "Railings"

Hardware: Under General Notes, note: "Hardware Symbol occurs on or near door, thus:

H-5



see specification for hardware schedule

Insulation:

Acoustical Treatment, (Flame spread 0 to 25)

Refrigerator

Sound Isolation

Sound Transmission

Thermal:

Chimney (to prevent heat transmission to working areas)

Note "Insulation" (Spec. Det.)

Floor: Note extent in General Notes Panel

Radiator Enclosures (Spec. Det.)

Refrigerator

Roof: Note extent of plan or in General Notes Panel

Wall and Partitions: (Indicate extent) (Note "Insulation")
(Spec. Det.)

Index of Drawings

Judges' Suites: (See "Handbook, U.S. Courts")

Jury Box: (S.D. 6-24-21)

Knockout Panels: (Note) Dimension

Boiler (Des. Data 29-3-6)

Future Openings, floor and wall

Ladders: (note) (S.D. 6-11-7)

Extension, steel

P.O. Lookout (S.D. 6-14-3) Note "up" or "down".

Roof

Scuttle (S.D. 6-12-1)

Shafts, Pits, etc.

Stacks (may be steel rungs set into masonry)

Trap Door (S.D. 6-15-10)

Lettering: (Follow Des. Data 28-1-1 and 28-1-14)

Lobbies: (Note each)

Courtroom

Elevator

Lockbox

Post Office

Public

Lobby Desks (See "Desks" Lobby" furnished by Government and installed
by Contractor,)(Des. data 28-30-50)

Lock Boxes (See S. D. 6-16-22)

Lockers: Note "Lockers, N.I.C." Indicate layout

Lookout System: (Separate plan and sections if necessary for clarity)

Breakout Door (Swing door in) (S.D. 6-14-1, 2)

Gallery: Maximum visibility 60'-0".

Hanging Type (S.D. 6-14-1) (Dot on plan of floor below)
Floor Type (S.D. 6-14-2) Over vault (S.D. 6-14-1)
Glow lights
Guard Rails (Note) (S.D. 6-14-3)
Ladders (Note) (S.D. 6-11-7 and 6-14-3)
Louver (Note) (S.D. 6-14-5)
Observation Units: (Approximately 12' -0" o.c.)
 Floor Hole Type (Note) (S.D. 6-14-4)
 Wall Type (Note) (S.D. 6-14-15)
Shaft (S.D. 6-14-3)
 Guard rails (Also where level changes)
Telldales (Note) (S.D. 6-14-9) Use if required.
Louvers (Note)
 Door (Refer to "Handbook, Mechanical and Electrical Engineering")
 Door symbol and schedule
 (S.D. 6-15-1)
Elevator, Machine Rooms (S.D. 6-9-8) (Note size)
Fusible link (Spec. Det.) Note size
Transformer Room (Note size)
Wall (S.D. 6-9-8) (Spec. Det.) Note size
Maintenance and Repair Rooms
 Airconditioning
 Boilers (indicate boiler and sink)
 Elevator machinery
 Fan
 Fuel
 Incinerator
 Pump
 Radio - TV
Manhole : (Note) Floor cleanout (S.D. 10-2-2)
 Drop Sewer: (S.D. 10-2-15)
Marquees: Mailing Platform (Des. data 28-9-28)
 (Note) Dotted lines on plan of floor below, 7'-0" from
 platform edge on up to 150'-0" length, and 10'-0"
 overhang above 150'-0" length
Metals: Note kind, as bronze, steel, etc.
Metal Shelving:
Mirrors: Note type. Not to be placed over lavatories in Womens'
 Toilets. (S.D. 6-13-31)
Module Lines (General Office Space) (Des. data 28-1-40)
Monorails (Note) Note type (Spec. Det.)
Not in contract: Note "N.I.C."
Numbering System:
 Drawings
 Elevators: Number each
 Exterior Door Openings

- Finish:** Note Finish Number in each room or space that has a Space Number as "F-1", "F-12", "F-21", etc.
- Interior Doors** (S.D. 6-15-1)
- Special doors:** (S-1, S-2, etc.)
- Signs:** (See under "Signs")
- Space Numbers:** (See chap 9-17)
- Stairs:** Number 1, 2, 3, etc. on all floors; note Space Numbers on each floor, if needed.
- Observation Units:** (See "Lookout System") (S.D. 6-14 series)
- Partitions:** Note material, thickness, and extent of typical partitions in "General Notes" panel; indicate and note exceptions.
- Brick:** Note thickness (if not dimensioned) (Des. Data 28-1-42)
- Concrete:** Note thickness (if not dimensioned)
- Movable:** Not to be shown on plans if General Office Space is greater than 5,000 square feet (Des. Data 28-30-52)
- Solid Plaster:** Note thickness and material, as "2" Solid Plas."
- Soundproof:** Note thickness, (Spec. Det. if necessary)
- Steel and Glass:** Note "Stl. & Gl." (Spec. Det.)
- Steel Stud:** Note size of stud, as "4" Stl. Stud" (Spec. Det.)
- Structural Facing Tile:** Note thickness (if not dimensioned) and material, as "4" S. F. T."
- Wire Mesh:** (S.D. 6-11 series) Note "Wi. mesh part."
- Doors:** (S.D. 6-11-2, 3, 4, 8)
- Wickets and Counters:** (Note) (S.D. 6-11-5, 6)
- Wood and Glass:** Note "Wd. and Gl." (Spec. Det.)
- Wood Stud:** Note size and spacing of studs, as "2" x 4" - 16" o.c."
- Penthouse:**
- Machinery slabs** (Spec. Det.) Elevation above floors
- Machine Room:**
- Trap Door:** Dimension (S.D. 6-15-12)
- Pilasters:** Dimension projection, width and location in architecturally important spaces
- Pipe Chases:** (See under "Chases")
- Piping:** (Check with M-E drawings for "exposed" or "concealed")
- Pistol Range:** (See "Target Range")
- Pits:** (Note) (Dimension and locate) (Refer to "Handbook, Mechanical and Electrical Engineering")
- Boiler** (Des. Data 29-3-2, 30-3-1) (S.D. 8-3-1, 2: 8-4-1)
- Elevator** (Des. Data 30-5-3, 4)
- Firing** (S.D. 8-3-1, 2) (S.D. 8-4-1)
- Scale** (Des. Data 28-12-3, 4, 5; 29-2-3)
- Sump** (Des. Data 29-3-3)
- Other** (Note kind)
- Platforms:** Dimension (Des. Data 28-9-28)
- Platform Bumper** (S.D. 6-8-3)

Loading: (Note) Note floor material

Mailing: (Post Office only) (Note) Note floor material (Des. Data 28-9-28)

Plumbing Fixtures: (Des. Data 28-1-6) On general plans at all scales, indicate the plumbing fixtures that are not in Toilet Rooms: note kind of fixtures if at 1/8" scale or less.

In Toilet Rooms: on 1/8" or smaller scale general plans, indicate enclosures only and detail toilet rooms at 1/4" scale. On general plans at 1/4" scale, indicate enclosures and fixtures.

Lavatories (mandatory locations)

Civil Service Examination Rooms

Fingerprint Room

P.O. Inspector (where not domiciled)

Sinks (mandatory locations)

Boiler Room (Service Sink)

Gear Room (Floor Receptor) (Des. Data 28-12-1, S.D. 6-13-20)

Service Closet (Floor receptor) (Des. Data 28-12-2, S.D. 6-13-20)

Post Office Screenline: Lock Boxes and Drawers, Letter Drops Panel.
(Des. Data 28-9-57)

Counter and gate (S.D. 6-16-23, 24)

Lockboxes and drawers (S.D. 6-16-22)

Letter Drops Panel (S.D. 6-16-22)

Present Work:

To remain: (Note) Show extent

To be removed: (Note) (Des. Data 28-1-4) Show extent

Promenade Decks: (Note) floor material; drains, expansion joints

Railings, Pipe, for the Tile Roofs (S.D. 6-12-6)

Protection:

Bumpers (Note) (S.D. 6-8-3)

Columns and piers (S.D. 6-11-10)

Corner angles (S.D. 6-11-10)

Drinking Fountains

Fuel Rooms

Wheel guards

X-Ray

Other

Racks:

Fire Extinguisher (S.D. 6-19-7)

Hose: Note "F.H.R. (See "Handbook, Mechanical and Electrical Engineering")

Mop (S.D. 6-22-1)

Radiator:

Enclosures: (See "Grilles, Radiator")

Guards, (Note)

Railings: (Note) Note material

Away (S.D. 6-11-20)

Courtroom (S.D. 6-24-7)

Entrance (S.D. 6-10-11)
Gate for Ash Hoist
Hand (S.D. 6-10-1) (Des. Data 28-8-5)
Lookout, Guard (S.D. 6-14-3)
Office: Note if "N.I.C."
Pit (S.D. 6-11-20)
Railings, Pipe, for Composition Roofs (S.D. 6-12-5)
Railings, Pipe, for Promenade Roofs (S.D. 6-12-6)
Stair (S.D. 6-10-1, 2) (Spec. Det.)
Other (Spec. Det.)
Ramps: (Des. Data 28-7-2) (Note) Note percentage of grade,
dimensions, clearance, material, elevation top and
bottom, direction.
Wheel chair (Des. data 28-7-2)
Refrigerators:
Portable: Note "Refig."
Walk-in: Note kind, as "Meat", "Dairy", "Freezing", etc.
Removable Sections: See Knockout Panels"
Roofs: (Note material, drains, gutters, ventilators, radio aerials,
skylights, television aerials, scuttles) (S.D. 6-12-1)
Flat: Note elevation of high and low points (if any)
Eaves (S.D. 6-12-2)
Railings, Pipe, for Composition Roofs (S.D. 6-12-1)
Railings, Pipe, for Promenade Tile Roofs (S.D. 6-12-6)
Sloping:
Crickets (Note)
Dormers
Hips
Insulation
Ridges
Snow Guards
Valleys
Vent Pipes (Note "V.P.")
Roof Drains: See "Drains"
Room Titles
Scales, Drawing
Numerical (Note under title of each drawing)
Scales, Weighing:
Counter:
Monorail: Locate and note "Scale above"
Platform:
Up to 10,000 lbs. (Note "Scale"); dimension the size and
location (Des. Data 28-12-3; 29-2-3)
Over 10,000 lbs. (Note "Scale"); dimension the size and
location (Spec. Det.)

Pit: Built-in Platform (Des. Data 28-12-3)
Built-in Platform (Interior Weight Indication) (Des. Data 28-12-4)

Schedules:

- Interior Door (S.D. 6-15-1)
- Finish

Screenline (See "Post Office Screenline")

Scuppers

Scuttles, Roof: (Note) (S.D. 6-12-1)

Section Lines: Note drawing number on which Sections occur

Shafts: (Note) Kind, Space Number, Dimensions

- Airconditioning
- Elevator (See "Elevators" and "Numbering Systems")
- Lookout (See "Lookout System")
- Pipe
- Ventilating
- Wire
- Other

Shelving

Showers: (Note) Dimension and locate (S.D. 6-13-1, 2, 4, 6, 7)

Shutters: (Note)

- Fire
- Projection Room
- Window
- Other (Note kind)

Signs:

- Building Identification
- Construction Sign (Note "S.D. 6-4-1" on Cover Sheet Drawing No. 0-1)
- Inscriptions: Cornerstones, etc. (Spec. Det.) (S.D. 6-6-2)
- Letters: (Des. Data 28-2-1, 28-2-2, 28-2-6)
- Seals, U.S.: Furnished by Government and installed by Contractor (S.D. 6-22-3)
- Title Letters: (Spec. Det.) (Des. Data 28-2-1, 28-2-7)
- Other: (Spec. Det.)

Skylights: Do not provide unless specifically authorized.

Sleeves, pipe: General Note Panel: "For special pipe sleeves, see Mechanical and Structural drawings"

Slopes, floor: Give relative elevations of high and low points.

Snow Guards: (Note) Indicate extent

Space Numbers

Splashblock: (Note)

Splash Pan: (Note)

Stacks: (See "Chimneys")

Stairs and Steps: Brick (S.D. 6-2-21), Flagstone (S.D. 6-2-23)

Chart and Dimensions (Des. Data 28-8-1)
(See also "Handrails" and "Railings")

Direction symbol (Des. Data 28-1-4)

Exterior:

Entrance steps: Note material, jointing, dimensions,
railings (Spec. Det.) (Main entrance at grade level)

Interior:

Note dimensions, space number, number of stairway, railings

Standard Details: (Abbreviation "S.D.") modify only if necessary.
(See example on cover sheet)

Storm Sash:

Sump Pit: (See "Pits, sump")

Survey, topographic

Symbols:

Conventional (Des. Data 28-1-4) Do not use entrance symbols
or graphic scales on working drawings.

Door (S.D. 6-15-1, Des. Data 28-1-5)

Furniture (Des. Data 28-1-7)

Materials (S.D. 6-1-1)

Model (Des. Data 28-1-5)

Method of identifying details (Des. Data 28-1-4)

Miscellaneous (Des. Data 28-1-5)

Plumbing (Des. Data 28-1-6) (S.D. 10-2-1)

Heating, Ventilating and Airconditioning (S.D. 10-3-1)

Electrical (S.D. 10-4-1)

Tackboards

Target Range: (Note) (Des. Data 28-22-1)

Telephone:

Standard recess (S.D. 6-21-1)

Special (Spec. Det.)

Telephone Suite:

Frame Room

Rest Room

Switchboard Room

Toilet

Telltales: Lookout (S.D. 6-14-9) Note on Lookout Plan. Use only if
required.

Terrazzo: Floors (Detail pattern, dividing strips) (Des. Data 28-30-40)

Thresholds: Note, with type as T-1, T-2, etc. (Des. Data 28-1-5)
(S.D. 6-15-7,) (Spec. Det.)

Titles: Under each drawing on sheet as FIRST FLOOR PLAN, SECOND FLOOR
PLAN, etc.

All room and spaces

Drawing Title Block (Fill in) (Des. Data 28-1-17 thru 28-1-24)

Signs (See under)

Toilets: See "Plumbing Fixtures" (Des. Data 28-1-6) (S.D. 6-13 series)

Agency Employees (Note "M" or "W")
Custodial Employees (Note "Custodial", "M" or "W")
Mirrors, Wall, (S.D. 6-13-31)
Persons with ambulatory impairments (S.D. 6-13-18)
Private: Note "Toilet"
Public (Note "M" or "W")
Swing Room
Urinal Partitions (S.D. 6-13-25, 26)
Water Closet Enclosures (S.D. 6-13-11, 12, 13, 14, 15, 18, 21, 22, 24)
Trap Connections, Mechanical (S.D. 10-3-3)
Trap Doors (Note) Dimension and locate (Spec. Det.)
Attic (S.D. 6-15-10)
Machine Room (S.D. 6-15-12)
Sidewalk
Other (Note kind)
Trenches and/or Covers: (Note) Note material. Indicate extent.
Pipe Trench (S.D. 10-3-4)
Tunnels: (Note kind, dimension, locate)
Pedestrian (Des. Data 29-2-9)
Service (Des. Data 29-2-8)
Unassigned Space: (Note "Reserved") Note use, as "Office", "Storage", etc.
Unexcavated Areas: (Note) Note elevation of excavation or fill.
Unfinished Spaces: (Note "Unfinished")
Vaults: (Des. Data 28-10-2)
Post Office Door (S.D. 6-15-21)
Lookout, over (S.D. 6-14-1)
Vent pipes (Locate)
Transformer (Des. Data 30-4-13)
Vents: (Note) Note size and location. (See Vents, Sanitary Piping
System in "Handbook, Mechanical and Electrical Engineering")
Crawl Space
Exterior wall (S.D. 6-9-7)
Interior wall or partition
Lookout: (See "Lookout System") (S.D. 6-14-5)
Roof
Vault: (S.D. 6-15-23, 25, 31, 32)
Vestibules: (Note) (Indicate and note "Rad. Encl.")
Entrance (Wood) Des. Data 28-7-5
Mailing (Des. Data 28-9-28) (S.D. 6-9-13, 6-9-26)
Public (Des. Data 28-7-4)
Wainscot, Work Room (S.D. 6-15-5, 6-11-10)
Walks: (Note) (Note widths and material)
Attic (S.D. 6-15-11) (Des. Data 29-2-4)
Roof:
Flagpole (S.D. 6-3-2, tilting S.D. 6-3-4)

Weather Bureau facilities

Platform and railing (S.D. 6-12-5, 6)

Walls, exterior: Dimension thickness; hatch as required.
(Des. Data 28-1-5, 28-1-42)

Wall Hydrant: Note "W.H."

Weather Bureau Equipment: (Note)

Weatherstrips: (S.D. 6-15-24)

Windows:

Provision for washing

Interior: (Note) (Spec. Det.)

Grilles:

Exterior: (Spec. Det. if architecturally significant)

Interior: (S.D. 6-11-15) (Spec. Det. if architecturally significant)

Wire Mesh: See Partitions, Wire Mesh.

7. CHECKLIST FOR ELEVATIONS.

Abbreviations: On drawing (S.D. 6-1-2)

Access: (Note) (Dimension)

Doors

Knock-out panels (Des. Data 29-3-6)

Other

Arches: Indicate architectural elements, as keystones, voussoirs, skewbacks, etc. Note material (Spec. Det.)

Areaways:

Copings (Note) (Note material)

Floor (dotted lines)

Gates (Note) (Spec. Det.)

Openings (Dotted lines)

Railings (Note) (S.D. 6-11-20) (Spec. Det.)

Steps (Dotted lines)

Brick Bonds and Joints (S.D. 6-5-1)

Brick (Face) Types and Textures (S.D. 6-5-2 to 6-5-9 incl. and 6-5-11 to 6-5-14 incl.)

Bumper: (Note) (Note materials) (S.D. 6-8-3)

Cheek Blocks: Note material, indicate jointing

Chimney: Note height and material

Cap: Note material (S.D. 6-12-7)

Steel Stack:

Coal Doors: (Note) (S.D. 6-9-3, 4, 6)

Copings: Note material and height; indicate jointing and bonding

Cornerstone: (Note) (Spec. Det.) (S.D. 6-6-2)

Document Box (Note if required (S.D. 6-6-1)

Cornices: Note material and height; indicate jointing and bonding

Eaves for Flat Roofs: (S.D. 6-12-2) (Spec. Det.)

Dimensions: Story heights; floor to floor to roof slabs, to tops of copings (See chap 2-6, 7) Openings tied to floor lines in continuous dimensions.

Doors, Public Entrance (Spec. Det.)

Mailing Vestibule (S.D. 6-9-26)

Downspouts: Exterior. Note material, "D.S., size; indicate straps, boots, splashblocks (Note)

Conductor heads: (Spec. Det.)

Elevations (grades): (Des. Data 28-1-4); new or established at corners of building; at change in slope

Fire Escapes: Note (Spec. Det.)

Flagpole: Note (S.D. 6-3-1, 2, 4) Material of base of ground flagpole. Note height.

Flashings: Note material (S.D. 6-12-2)

Floor (and Roof) Lines: (Des. Data 28-1-4)

Footings: Indicate by continuous dotted outline

Glass: See Schedule 5-1 (Des. Data 28-30-13)

Grilles: (Note) (Spec. Det.) Door and window

Masonry

Ventilating

Other

Guards: (See "Protective Metal")

Inscriptions:

Title Letters

Metal (Des. Data 28-2-1, 7)

See "Cornerstone"

Ladders: (Note) (S.D. 6-11-7) (Spec. Det.)

Louvers: (S.D. 6-9-8) (Spec. Detail)

Materials (Note kind) (S.D. 6-1-1)

Indicate jointing and bonding (stone work)

Note construction

Note joints; construction, false, expansion, control (S.D. 8-5-3, 4)

Metals: Note kind, as bronze, steel, etc.

Models: (Des. Data 28-1-5) (Spec. Det.)

Architectural

Note material and Model Number

Sculptural

Note material and Model Letter

Openings: (Des. Data 28-1-5)

Draw complete indication in the first opening of any series of similar openings, reading horizontally or vertically, and in dissimilar openings. Outline the others in a series.

Ornament: Indicate start only. Note "Continued" or "Repeat"

Note material and texture

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Protective Metal (Note item)

Corner angles (S.D. 6-11-10)

Columns and piers (S.D. 6-11-10)

Wheel guards

Wainscot (S.D. 6-11-10)

Relieving angles (dot in location)

Roof: Note material. Indicate pitch, flashings, crickets, vents, scuttles, skylights, dormers, penthouse.

Sculpture:

Seals, U.S.

Spendrels: Note material.

Steps: Note material, jointing (S.D. 6-2-21, 23) Railings:
(See "Stairs and Steps", Floor and Roof Plans Checklist)

Titles: on drawings; see chap 2-4

Titles of Federal Buildings

Vents, Exterior Wall (S.D. 6-9-7)

Windows: (See "Openings")

8. CHECKLIST FOR LONGITUDINAL AND CROSS SECTIONS.

Abbreviations: (S.D. 6-1-2)

Areaways: (Spec. Det.): material, railings, floors, drains, coping,
grating

Brick, Note (See check list for elevations.)

Bumper Note (S.D. 6-8-3)

Cant Strip: Extent

Ceilings: Note furred ceiling, suspended ceiling, heights

Concrete: Note

Conductor Heads: Note material, indicate opening through wall;
material, extent

Copings: Material, extent

Cornices: Outline (S.D. 6-12-2)

Doors:

Downspouts: (Note) Material, size, straps, boots, splashblocks.

Elevations: (Grades) (Des. Data 28-1-4)

Present and new

Unexcavated, filled, excavated

Unfinished portions

Indicate whether established grade, new grade, present grade

Note basement and first floor grade levels

Flashings: Note material, indicate flashing, counterflashing

Footings: On longitudinal and transverse sections only, indicate
by solid lines under wall sections and by dotted outline
for columns.

Grilles: Indicate in walls, doors, etc. Note material.

Guards: Armor, wheel, column, wainscot (S.D. 6-11-10)

Heights: Floor to floor to roof; ceiling

heights, ceiling to finish of floor; floor to lookout to ceiling
in lookout.

Lobbies: Indicate desks, bulletin boards, clocks, murals, wainscot, etc.
Lock Boxes: (Des. Data 28-9-57) (S.D. 6-16-22)
Lookout Galleries: (S.D. 6-14 series) clearances, observation units, vents, ladders, guard rails, ramps, telltales
Marquee: Clear height above high point of grade at mailing platform (Min. 14'-0")
Metals: Note kind, as bronze, steel, etc.
Murals:
 Note material and extent
Openings: Doors or windows
Post Office Counter Line: (Des. Data 28-9-56) (S.D. 6-16-23, 24)
Roof: Material, cant strips, flashing, crickets, insulation, vents, scuttles, skylights, penthouses, ladders, parapets, counter-flashing, roof drains, high and low point distances above floor below.
Shafts: Indicate
 Chutes
 Elevator
 Pits (in dotted lines)
Skylights: Do not provide, unless specifically authorized.
Stairs: Indicate and outline (S.D. 6-10-10)
Storm Sash
Titles: see chap 2-4
Venetian Blinds (Design Data 28-30-53)
Vents: Indicate (Also see S.D. 6-9-7)
Vestibules: Indicate and outline
 Entrance (Wood) (Des. Data 28-7-5)
 Mailing (Des. Data 28-9-28) (S.D. 6-9-26)
 Other (Spec. Det.)
Wainscots: Indicate (S.D. 6-11-10) (Des. Data 28-11-1)
Windows: (See "Openings")
Weatherstrips (S.D. 6-15-24)

9. CHECKLIST FOR EXTERIOR DETAILS.

Arches:

 Anchors: Size, spacing, material
 Camber: Show and note kind of material.
 Dimensions: Height, width, radii, camber, spring line
 Flashing: Note
 Jointing: Note if ground or special brick is required (S.D. 6-5-1)
 Lintels: Note material
 Ornament: Model number or model letter

Balconies:

Anchors: Size, spacing material
 Dimensions: Size and spacing of members, height, length, width
 Drainage: Slope, floor drain, downspout
 Flashing: Copings, railings
 Materials: Note
 Ornament:

Brick bonds and joints: (S.D. 6-5-1)

Types and Textures (S.D. 6-5-2 to 9 incl. and 6-5-11 to 14 incl.)

Chimneys:

Cap: Note material (S.D. 6-12-7)
 Dimensions: Height of cap, size of flue, thickness of wall,
 distance from top of chimney to boiler room floor
 Ladders: Interior, exterior (S.D. 6-11-7)
 Lightning Rods
 Sections: Materials; if cap is of concrete, indicate and note
 reinforcement (S.D. 6-12-7)

Coal Holes and Doors: (S.D. 6-9-3, 4, 5, and 6)

Dimensions

Drainage: Slope paving away from driveway coal hole

Material: Note

Columns:

Anchors: Size, spacing, materials
 Base
 Dimensions: Height, diameters, entasis
 Flashing

Cornerstone: (S.D. 6-6-1) (Spec. Det.) Note material

Inscription (S.D. 6-6-2)

Letters and Numerals: (Des. Data 28-2-1, 6)

Document Box in Cornerstone (S.D. 6-6-1)

Doors: 1/2 elevations; 1/2 plan, section (See "Doors, Exterior",
 Floor and Roof Plans Checklist) (Des. data 28-1-5, 28-1-41)

Casing

Check: Note

Cleaning: Check for cleaning behind grilles and screens

Coal: (S.D. 6-9-3, 4, 6)

Dimensions: Height, width, thickness

Employees Entrance (S.D. 6-9-13)

Entrance

Frame

Glass

Grille

Hardware

Interference: Check for hardware interference.

Kick plates

Mailing Vestibule (S.D. 6-9-26)
Material: Note
Number Openings (see chap 9-19)
Pull Bars and Push Plates
Reveal
Screen Door
Sill
Threshold (S.D. 6-15-7)
Transom: Hinged or fixed
Weatherstripping (S.D. 6-15-24)
Dormers: 1/2 elevation; 1/2 plan; section
Anchors: Size, spacing, materials
Dimensions: Height, width
Flashing: Roof, under sills. Note
Materials: Note
Roof: Note material and pitch
Downspouts:
Boots: Size
Conductor Heads
Materials: Note
Size
Splashblock
Straps: Size, spacing
Entrances: 1/2 elevation; 1/2 plan; section; note all materials
Anchors: For masonry and metal (Size, spacing and material)
Bonding: Masonry material (S.D. 6-5-1)
Canopy
Cheek Blocks, Joints
Dimensions
Doors: (weatherstripping) (S.D. 6-15-24)
Entrance Platform: Grade elevation, joints, thickness of
floor materials
Marquee
Steps
Tunnels
Flashing: Note material
Ornament: Model numbers
Model letters
Radiator Enclosure: Grille, insulation, lining, removable front
Steps: Wash; height and width; base construction
Thresholds (watertight) (S.D. 6-15-24)
Vestibule: Floor construction and finish; detail wall or partition;
ceiling furred, suspended, radiator enclosure; light-
ing fixture (Des. Data 28-7-4)
Fences:
Anchors

Bracing, at gates and corners

Dimensions: Size and spacing of members; height

Material: Note

Posts: Foundation, shaft, cap

Flagpoles: (S.D. 6-3-1, 2, 4,) Where special detail is required for base, etc., the design data and standard details shall be followed in principle. Note walk if required.

Height: Note

Material: Note

Flashing and Counterflashing: Note

Material: Note

Spandrel

Other

Fountains:

Basin: Note material

Dimensions

Fountain-heads; Note material

Joints: Note caulked, concealed

Lighting: Indicate, note watertight glass lens frames

Material: Note

Overflow: Size and material

Waterproofing: Note

Water re-circulation: Space for motor and equipment

Gates:

Anchors: Sizes, material, spacing

Dimensions: Size of members, height and width of gate

Isolation: Note non-corrosive and non-staining metal in contact

Pipe Rail

Grilles: Note material (Spec. Det.)

Anchors: Size, material, spacing

Dimensions: Size of members, height and width of grille

Isolation: Note non-corrosive and non-staining metal between metal in contact with stone.

Inscriptions and Signs: (See "Signs", Floor and Roof Plans)

Joints:

Construction Joints:

Concrete Driveways (S.D. 6-2-8)

Concrete Walks (S.D. 6-2-8)

Concrete Walls (S.D. 8-5-3)

Expansion Joints: (S.D. 6-2-8) (Spec. Det.)

Dimensions

Drainage

Flashing: Note

Material: Note

Control: (S.D. 8-5-4)
 Dimension
 Material

Knockout Panels: (Des. Data 29-3-6)
 Material: Note
 Section through joint
 Waterproofing

Ladders: (S.D. 6-11-7) (Note material)

Lighting: (S.D. 10-8 series) (Spec. Det.)
 Recessed, Bracket, Pedestal, Pole

Louvers: (S.D. 6-9-8)
 Dimensions: Height and width of opening, size of members
 Doors (S.D. 6-15-1)
 Flashing
 Insect Screen
 Material: Note

Marquees: Mailing Platform
 Cant Strip
 Dimensions: Clear height 14' minimum above driveway, length, width, thickness taper, overhang 7'-0" from platform edge on up to 150'-0" length, and 10'-0" overhang above 150'-0" length.

Drainage: Roof outlet, downspout, gutter
 Flashing
 Gravel Stop
 Lighting
 Material: Note

Models:
 Indicate number or letter, material, extent (Des. Data 28-1-5)
 Architectural
 Sculptural

Openings: 1/2 plan, 1/2 elevation, section through and between openings.
 Dimensions: Height, width
 Door
 Flashing: Note
 Louver
 Material: Note
 Screen, insect
 Sill
 Vent (S.D. 6-9-7)
 Window

Ornament
 Extent
 Material: Note

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Model number or model letter

Pilasters: 1/2 plan, elevation

 Anchors: Size, spacing, material

 Bonding

 Dimension: Height, width, thickness

 Dowels: Size, spacing, material

 Jointing

 Material: Note

Platform: (Loading or Mailing) (Des. Data 28-9-28)

 Armor: (Note) Angle guards for corners and pilasters, steel
 wainscots for columns and walls (S.D. 6-11-10)

 Bumper: (S.D. 6-8-3)

 Concrete Platform: Note "waterproofed"; if over excavated
 spaces, slope platform, 1 inch in ten feet.

 Dimensions: Heights from driveway to platform, clear height
 14'-0" minimum to marquee, overhangs of marquee
 7'-0" on platform length up to 150'-0" and 10'-0"
 over 150'-0" length.

 Doors: Mailing Vestibule (S.D. 6-9-26)

 Section: Through loading platform, mailing vestibule, marquee

 Steps: Note "concrete non-slip".

Quoin: Elevation, plan

 Anchors: Size, spacing, material

 Bond: (S.D. 6-5-1)

 Dimensions: Height, length, depth, projection

 Jointing (S.D. 6-5-1)

 Material: Note

Railings: Note material

 Ornamental (Spec. Det.)

 Pipe (S.D. 6-11-20, 6-12-5 and 6-12-6)

Roofs:

 Cant Strips

 Coping

 Crickets

 Drains

 Eaves for Flat Roofs

 Elevator Hoistway Vents (Des. Data 28-11-5)

 Flashing

 Gravel Stops

 Gutters

 High and Low Points

 Insulation

 Lighting

 Material: Note

 Scuttles (S.D. 6-12-1)

 Snow Guards

Sculpture:

Anchors: Size, material
 Bonding
 Dimensions: Height, width
 Joints: Rubbed, concealed
 Lighting
 Material: Note
 Applied or Built-in
 Metal
 Stone
 Pre-cast
 Cast on Job
 Free-Standing
 Carved
 Cast
 Foundations
 Metal

Skylights: Do not provide, unless specifically authorized.

Steps:

Cheek Block
 Dimensions: Riser, tread, width, headroom
 Jointing
 Lighting
 Material
 Brick (S.D. 6-2-21)
 Concrete
 Flagstone (S.D. 6-2-23)
 Railings (S.D. 6-10-11)
 Wash (Exterior only)

Storm Sash (Des. Data 28-1-31)

Tablets: Must be authorized by Assistant Commissioner for D&C

Dimensions
 Inscriptions
 Material: Note

Title Letters: (Des. Data 28-2-1, 7) (Spec. Det.)

Height: 1, 2, 3, 4, 5, 6, 8, and 10 inches recommended.
 Material

Spacing Diagram (Des. Data 28-2-1, 7)

Style:

 Classical (Des. Data 28-2-6)
 Standard Stone or Wood (Des. Data 28-2-1)
 Standard Metal (Des. Data 28-2-1, 2)

Titles of Drawings

Tunnels: (Des. Data 29-2-8, 9)

Dimensions: Height, width, thickness

Drainage
Escape Parts
Hangers
Lighting
Materials: Note
Ventilation
Waterproofing

Vents: Attic wall, underfloor walls, space, foundation, other
Damper
Dimensions
Hinged cover on inside
Insect Screen
Louvers: Hinges
Materials: Note

Vestibule:

Employees Entrance Doors (S.D. 6-9-13)
Mailing, Doors (S.D. 6-9-26)

Wall Sections: Typical and Special. Sections are detailed from basement floor to coping material. They may be broken and parts omitted where information is not necessary, but shall be accompanied on the same sheet with partial elevation and plan section at the same scale (Des. Date 28-1-41)

Anchors: Size, material (Des. Data 29-6-1 & 2)

Areaways: Material, wall coping, railing (Spec. Det.) grating, (S.D. 6-11-14), floor is not less than 1'-0" below window sill

Blocks, Glass, (Des. Data 28-30-14)

Bonding: (S.D. 6-5-1)

Ceilings: Note, furred, suspended, cornice, acoustic plaster, plaster (Des. Data 29-2-6) (S.D. 8-8-1)

Coping

Cornice: Cramps, through wall bonding, flashing, gutters.

Dampproofing: Spandrels, etc.

Dimensions: Heights, reveals, thickness

Doors: Kick plate; grille; number opening; push and pull bars; door size and swing; threshold; weatherstrips; hardware

Downspouts: Material, size conductor heads, straps, boots

Drips: Masonry projections, sills, etc.

Finish: Ceiling, floor, wall, trim, wainscot, base

Flashings: counterflashing, spandrel, window, lintel

Floor: Construction at wall; indicate floor finish

Furring: Ceiling (Des. Data 29-2-6) (S.D. 8-8-1) Wall

Grilles: (Spec. Det.)

Gutters: Material, size, outlet, hangers, high point

Knockout panels: (Des. Data 29-3-6) Detail joint, dimension size and location
Ladders (S.D. 6-11-7)
Lintels: for masonry openings, transom, furring, etc.
Openings: (other than doors and windows) Lintels, armor guards, reveals, sills, wheel guards; indicate stone jamb bonding and anchors.

Panels

Parapets: Flashing

Pockets (for venetian blinds, etc.)

Radiator Enclosures: Section, 1/2 plan, 1/2 elevation, insulation, lining, removable front (if special detail)

Roof: Cant strip, crickets, downspout and conductor head, roof covering, dormers, note snow guards, flashing, roof eaves, roof drains

Windows: Section, 1/2 plan, 1/2 elevation, reveal casing, stool, screen, grille, sill. Check hardware interference at screens and grilles. Check for cleaning. Storm Sash-Weatherstripping.

Walls attached to building:

Dimension: Height, width, thickness

Materials: Note

Waterproofing: Note (See Structural drawings for waterproofing below grade.)

Windows: (Other than those in Wall Sections)

Frames (Detail at 3" scale)

10. CHECKLIST FOR INTERIOR DETAILS.

a. Spaces Included. The spaces that will need interior elevations and details (in whole or in part) include:

Auditoriums
Cafeterias
Courtrooms
Elevator Lobbies
Kitchens

Libraries
Post Office Lobbies
Public Lobbies
Snack Bars
Special Offices
Special Rooms

Stairs
Toilets

Floor patterns, dimensions where accuracy is important, treatment around door and window openings, furring, and other elements must often be shown at large scale.

b. Schedules and Standard Details. Often the required information can be given in schedules or covered by Standard Details thus making drawings unnecessary. (See chap. 9-20, above.)

c. Explanatory Plan. In developing the interior elevations and details, a plan of all or part of the space may be needed.

d. Contours and Moldings. These are useless at less than full-size.

11. SUPPLEMENTAL CHECKLIST.

Abbreviations: (S.D. 6-1-2)

Acoustical Treatment: Material, extent, mounting, sound transmission class (Des. Data 28-30-1, 2)

Alternates: Detail and schedule if required. (Des. Data 28-30-50)

Additional drawings to be furnished contractor: Schedule (Des. Data 28-30-50)

Anchors: (Note) Size

Angles: Steel (Note) Size

Arches: Spring line, radius, treatment of soffit

Armor: Note material, extent

Attic Walks: (Des. Data 29-2-4) extent, access

Bench, Judges' (S.D. 6-24 series)

Blinds, Venetian, (Des. Data 28-30-53)

Boiler pit: (Des. Data 29-3-2) (S.D. 8-3-1, 2) (S.D. 8-4-1) Location, size, material, elevation

Boiler setting

Breeching Opening: Height above floor; size

Bulletin Boards:

Boiler and Mechanical Rooms (See "Tackboards".)

Civil Service (S.D. 6-17-1)

Lobbies (S.D. 6-17-1)

Post Office (S.D. 6-17-1)

Cabinets:

Counter

Fire Extinguisher (S.D. 6-19-3)

Fire Extinguisher Recess (S.D. 6-19-5)

Fire Hose (S.D. 6-19-2)

First Aid (S.D. 6-19-4)

Key (See Specifications.)

Medicine (S.D. 6-19-4)

Cases: Exhibit - Historical Data (S.D. 6-19-8)

Ceilings: Exposed slab; applied; attached; suspended; height (S.D. 8-8-1) (Des. Data 28-30-1)

Cell, Prisoners Detention: (S.D. 6-11-11)

Bench (Des. Data 28-14-1)

Chases: Size, extent, location

Chutes:

Coal

Linen

Mail (Buildings 4 stories or more in height)

Package

Parcel Post

Refuse

Clearances:

Lighting Fixtures (Refer to "Handbook, Mechanical and Electrical Engineering")

Lookout galleries (S.D. 6-14 series)

Marquees, P.O. (14'-0" minimum)

Pipes

Stairs (Des. Data 28-8-1)

Other

Clocks: Location, finish, type, height above floor (S.D. 6-18-1 to 6-18-4)

Closets:

Coat (Des. Data 28-15-4)

Gear Room (Des. Data 28-12-1) (S.D. 6-22-1) (S.D. 6-13-20)

Service (Des. Data 28-12-2) (S.D. 6-22-1, 6-13-20)

Linen

Supply

Wire

Cornices: Material, profile

Corridors: Materials, treatment

Counters: (S.D. 6-20-6): P.O. (S.D. 6-16-23, 24)

Courtroom: (Des. Data)

Curbs: Material, height, extent

Desks, Lobby (Note "Desk" furnished by Government and installed by contractor)

Directory Boards, (S.D. 6-17-1)

Doors: (S.D. 6-15-1) (Spec. Det.) (See "Doors", Floor and Roof Plans Checklist)

Drains: (Note) Material, size, locations

Drawers: Material, size, construction, division, tracks, pulls, locks (S.D. 6-24-1)

Elevators: See "Elevators", Checklist for Floor and Roof Plans

Escalators: (Refer to "Handbook, Mechanical and Electrical Engineering")

Expansion Joints: At floors, partitions, interior walls, etc.

Fireplaces: Note size, material, hearth, smoke chamber, flue size, etc.

Fire Extinguishers:

Cabinets: (S.D. 6-19-3)

Hose: (S.D. 6-19-2)

Racks: (S.D. 6-19-7)

Recess (Steel)(S.D. 6-19-5)
Floor: See Check List, for Floor and Roof Plans
Furring: (Des. Data 29-2-6) (S.D. 8-8-1)
Ceilings
Cornices
False beams
Walls
Gear Room: (Des. Data 28-12-1) (S.D. 6-22-1, 6-13-20)
Glass: Schedule (Des. Data 28-30-13)
Grilles
Ornamental
Vents
Window (S.D. 6-11-15)
Wire Mesh (S.D. 6-11-1)
Guard Rooms: Alarm systems, special furniture
Handrails:
Entrance (S.D. 6-10-11) (Spec. Det.)
Wall (S.D. 6-10-1) Size, material, extent
Hardware: Pull and push bars, kick-plates, locks, etc. (Special
Hose Cabinets: Fire (S.D. 6-19-2) Design)
Interior Openings:

A. Doors: (See "Doors", Checklist for Floor and Roof Plans)
B. Windows: Material, size, extent, glazing
C. Cased Openings: Size, treatment

Jury Box (S.D. 6-24-21)
Ladders: Material, size, extent; P.O.D. lookout (S.D. 6-11-7)
Laboratories: (See "Project Directive" Locate and note special
services and equipment. Note equipment N.I.C.)
Lighting Fixtures: (S.D. 10-8 series)
Lobby Desks: (See "Desks".)
Lock Boxes: (S.D. 6-16-22, Des. Data 28-9-57)
Lookout Galleries: For Post Office (S.D. 6-14 series)
Materials: (Note) Describe by Schedule
Models: Indicate number, material, extent (Des. Data 28-1-5)
Monorails: Material, size, extent, anchorage
Movable partitions: Schedule (Des. Data 28-30-52)
Murals: Locate, note
Partitions:
Movable (Des. Data 28-30-52)
Wickets
Wire mesh (S.D. 6-11 series)
Pockets for Venetian Blinds (Des. Data 28-30-53)
Radiator:
Enclosures: Material, insulation, deflector shields, grilles,
Guards

Ranges, Pistol: Deflector plates, baffles, target carriers,
counters (Des. Data 28-22-1)

Refrigerators: Drains, insulation, wall and ceiling protection,
shelves, hooks, monorails, doors

Rolling Curtains: Material, method of operation

Schedules: (See chap. 9, above)

Screens:

Insect (Note and indicate location) Description by specifications.

Shafts:

Dumbwaiter (Des. Data 30-5-5)

Elevator (Des. Data 30-5-1, 2, 3, 4, 6)

Freight (Des. Data 30-5-1)

Garage (Des. Data 30-5-4)

Hospital (Des. Data 30-5-6)

Passenger (Des. Data 30-5-2, 3)

Lookout (See Lookout System")

Mechanical

Vent

Shelving

Built-in

Movable (N.I.C.)

Signs

Stairs: (S.D. 6-10 series) (Des. Data 28-8-1, 2 for riser and tread
combinations) Keep with preferred section if possible.

Primary stair, secondary stair, indicate up or down runs, number
of risers, railings, handrails, platforms, stringers, soffits,
balustrades

Treads and risers

Storm Sash:

Tablets: Material, location, inscription.

Tackboards: Portable, (S.D. 6-17-2)

Telephones:

Public (Note)

Standard Recess (S.D. 6-21-1)

Special

Terrazzo: Pattern, division strips, etc. (Des. Data 28-30-40)

Thresholds: Note type, material (S.D. 6-15-7, 24)

Titles of Drawings

Toilets: (See "Water Closet Enclosures".) Locate fixtures, partitions,
shelves, mirrors, etc. (Des. Data 28-1-6, 28-20-3)
(S.D. 6-13 series)

Trim: Profile, material, size, location

Vaults: (Des. Data 28-10-2)

Crypto & Code (S.D. 6-15-25)

Clerk of Court (S.D. 6-15-32)
FBI Firearms (S.D. 6-15-32 modified)
Post Office (S.D. 6-15-21, 23)
Steel Lined (S.D. 6-15-31)
U.S. Marshal (S.D. 6-15-32)
Venetian Blinds: Pockets, brackets, material, width, color (Des.
Data 28-30-53)
Vestibules:
Entrance (Des. Data 28-7-4)
Mailing (Des. Data 28-9-28)
Wainscots: Material, height, jointing, base, cap
Courtroom
Work Room (S.D. 6-15-5, 6-11-10)
Other (Des. Data 28-11-1)
Water Closet Enclosures
Window: (See "Interior Openings")

CHAPTER 12.
ASSIGNMENT PLANS

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CHAPTER 12. ASSIGNMENT PLANS

PART 1. GENERAL

1. PURPOSE. Assignment plans are used by the General Services Administration and other agencies for several different purposes. They show the assignment and net areas of individual rooms and other spaces to each agency that will be quartered in a building. They indicate the net areas of various rooms and certain other important building area measurements. They also show door numbering. Assignment plans are used in the preparation of office furniture arrangements and also to record agency space assignments in the building. They are made soon after the award of the construction contract for a building, and whenever required for buildings purchased or leased by the Government. The system of numbering of offices and spaces is generally followed as indicated on Design Data 28-7-6.
2. BY WHOM PREPARED. The regional offices may prepare the assignment plans for projects assigned to them, and revise the assignment plans for Repair and Improvement projects in their regions; or assignment plans may be included in the architect-engineer contract for either a regional or a Central Office project.
3. SUBDIVIDING PARTITIONS. Refer to chap. 6, above, for guidance in connection with subdividing partitions in new buildings. The regional offices will study the space requirements as they affect the subdividing partitions and have the assignment plans prepared in conformity therewith.
4. PLANS. Assignment plans include a site plan and plans of all the floors, mezzanines, and roofs. When lookout galleries occur over vaults, separate drawings of them are made on the same sheet as the floor on which the vaults occur. If the lookout is suspended, it is shown by dotted lines on the building floor plan.
5. SECTION. A longitudinal section of the building in a single line diagram is drawn on the site plan sheet, and the dimensions of story heights, measured from finish floor level to finish floor level, including basement height, are shown; also height from top floor to mean height of roof, and from roof to roof of penthouse. All floor levels must be shown. The scale of the section may vary depending upon the placement on the sheet. In no case should the scale be larger than 1/8", but may be 1/32" or smaller.

6. NOTING DESIGN LIVE LOADS. There shall be noted on each floor plan the design live load for that floor. Where a design live load differs for a particular area of a floor, it shall be noted on that area or otherwise referenced.
7. RESERVED.

PART 2. REQUIREMENTS FOR ASSIGNMENT DRAWINGS

8. PENCIL ON TRACING CLOTH. Assignment plans for new buildings shall be drawn on standard sheets of tracing cloth or approved plastic film, ordinarily the no. 4 (24"x 18") size. The no. 5 (36"x 24") size may be used, if necessary (see drawings 14-1 series, appendix F). Slanting lettering should be used except for title blocks.
9. SCALE. The scale should be adjusted to the sheet size, but must always be large enough to permit reasonably accurate scaling. Whenever practicable, the plans shall be drawn to 1/8" - 1'-0" scale, thereby permitting use for furniture layout purposes and also the recording of assignments. When the use of this scale is impractical, because the building would exceed the no. 5 sheet size, 1/16" - 1'-0" may be used. This shall be coordinated with the regional Space Management Division, which has the responsibility of space assignments and furniture layouts. An engineer's scale is used for large or multiple-building site plans. The scale should be noted once on each sheet as on drawing 14-2; except, that if several drawings at different scales are on the same sheet, the scale under each must be noted. Graphic scales shall be included on all assignment plans.
10. DIMENSIONS. The exterior dimensions of the building are shown on the first floor plan to the extent required by the checklists that follow. The same data is shown on the plan of each upper floor that is set back from the exterior limits of the floor below it. The method of indicating dimensions is illustrated in Design Data 28-1-8.
11. TITLES NOTING POSTAL ACTIVITIES. The titles describing postal activities should be spelled out completely wherever space permits. Where space does not permit this, standard abbreviations listed in Standard Detail 6-1-2 may be used.
12. TITLES AND AREAS OF ROOMS AND SPACES. The titles of all rooms and spaces are noted approximately in the center of the room or space, and underlined. The net area of each space, preferably in the lower right corner of the room or space, should be given and underlined (if this corner is occupied by a door, the lower left corner is used). Scaled distances are used in computing these areas, instead of building dimensions. The figure noted in the room or space shall be the nearest multiple of 5 sq. ft. to the computed figure (i.e., for 143 sq. ft., 145 sq. ft. is noted).

13. FLOOR AREAS AND BUILDING VOLUME.

a. Floor Plans. On each floor plan the total areas pertaining to that floor are listed in the standard "note space" above the drawing title, as follows:

Net Agency Areas including Custodial Areas (except P.O.).....	_____	Sq. Ft.
Net Post Office Areas (if any).....	_____	Sq. Ft.
Net Assignable Areas.....	_____	Sq. Ft.
Circulation, Mechanical, and Construction Areas	_____	Sq. Ft.

*Gross Area..... Sq. Ft.
(See chap. 4-10 , above, for method of computing)

b. Site Plan. On the site plan, in the "note panel" above the title block in the lower right corner of the drawing, the grand totals for the entire building are listed in the same manner as in par. a, above, and the volume is added, as follows:

Net Agency Areas including Custodial Areas (except P.O.).....	_____	Sq. Ft.
Net Post Office Areas (if any).....	_____	Sq. Ft.
Net Assignable Areas.....	_____	Sq. Ft.
Circulation, Mechanical, and Construction Areas	_____	Sq. Ft.

*Grand Total of Gross Areas of Building..... Sq. Ft.
*Total Volume of the Building..... Cu. Ft.

On the site plan there are listed:

Ground area of Building.....	_____	Sq. Ft.
Gross Area of Lot.....	_____	Sq. Ft.

Note: For special purpose buildings, such as hospitals, etc., only the three items indicated by asterisks, above, are to be noted.

14. **ADDITIONAL STORIES.** On the site plan, in the "note panel" under "Gross Area of Lot", one of the following should be noted:

"Construction is designed for _____ additional stories."
(state number)

"Construction is not designed for any additional stories."
(structural engineers of PBS should be consulted for the proper entry):

15. **RESERVED.**

PART 3. NUMBERING OF ROOMS AND SPACES

16. PLACEMENT OF NUMBERS. The number of each room or space is noted as close as possible to the door to which the number pertains. On columns in open spaces, one of the four numbers assigned is noted on each of the four faces of the column. Note: Room numbers shown on assignment plans bear no relation to room numbers shown on working drawings.
17. SYSTEM OF NUMBERING.
- a. Indicating the Floor. (See Design Data 28-7-6.) The first digit or letters indicate the floor level. SSB, SB, B, and G represent respectively the sub-sub-basement, sub-basement, basement, and ground floor; above the ground floor the serial floor numbers 1, 2, 3, etc., are used. Mezzanine floors are indicated by M, followed by the symbol for the floor immediately below; thus M1 designates a mezzanine directly above the first floor, M3 a mezzanine directly above the third floor, etc. After the mezzanine symbol, a hyphen is inserted before adding the other numbers representing the headhouse or wing and the serial number of the rooms, as MG-012. (See c, below.)
- b. Indicating the Headhouse or Wing.
- (1) After the symbol of the floor level, the next digit indicates the headhouse or wing. The headhouse is represented by a zero and wings are numbered serially 1, 2, 3, etc.
- (2) In buildings shaped like the letters T, U or E, the base from which the single, double, or multiple wings extend is considered the headhouse.
- (3) In a rectangular building surrounding a court, or a large solid block building with no courts or wings, the side fronting on the principal street, or having the main entrance, is considered the headhouse. If there is a "main entrance", it is usually indicated by the architectural emphasis.
- c. Indicating the Room. The third, fourth, and subsequent digits represent the serial number of the room or space. For example:
- B012 ... Basement (B), Headhouse (0), Room (12)
B112 ... Basement (B), Wing (1), Room (12)
G042 ... Ground Floor (G), Headhouse (0), Room (42)
1331 ... Floor (1), Wing (3), Room (31)

3236 ... Floor (3), Wing (2), Room (36)
M3-021 . Mezzanine above third floor (M3), Headhouse (0)
Room (21)

18. ASSIGNMENT OF ROOM NUMBERS.

a. Rooms and Spaces Entered from Corridors and Lobbies.

(1) Design Data 28-7-6 presents four examples of block or wing type projects, indicating the basic principle for the assignment of numbers to rooms and spaces entered from corridors and lobbies.

(2) Because of the varied size, shape, and number of stories in block or wing type Federal buildings, the assignment of room numbers in each project will require an individual solution. The basic principle of the four examples should be followed where practicable, but may be modified where necessary.

(3) The assignment of numbers to rooms and spaces is not made until the assignment drawings are started, shortly after award of the construction contract.

b. Open Spaces. When open spaces are encountered, two or four room numbers are assigned to each column so that, if corridors and partitions are installed later, the office numbers will correspond in general with those on similar floors above or below. If the typical bays are more than 25 feet wide, four numbers are assigned to each column.

c. Reserving Numbers for Large Spaces. Ordinarily, one room number is reserved for each room or bay on a floor. When the typical bays are 25 feet in width, two numbers per bay are reserved. If a floor is partitioned into half-bay offices 2101 and 2103, 2105 and 2107, with a large general office space occupying the adjoining three bays of 25 feet each, the general office space and doors are designated as 2109 and 2119, but 2111, 2113, 2115 and 2117 are reserved for the space between. The adjacent offices are numbered 2121, 2123, etc. A future occupant could insert partitions in the former general office space, using the reserved numbers 2111, 2113, 2115, and 2117 and the designated office numbers would remain undisturbed. These reserved numbers are not noted on the plans.

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- d. Small Spaces. In the rare instances when a bay is divided into very narrow spaces, half numbers are used; for example 2101, 2101- $\frac{1}{2}$, 2103, 2103- $\frac{1}{2}$. This method will provide up to four numbers for one bay.
- e. Toilets and Service Closets. Toilets and service closets are assigned numbers because the room numbering system is closely related to the indexing of keys; and keys are provided for closets and toilets. These numbers are noted on the plans.
- f. Communicating Doors. Communicating doors in partitions between rooms are assigned the number of the room into which the door swings, followed by the capital letter A. If there are several doors swinging into the room, B is added for the second door, C for the third, etc. This system is also used for secondary doors within a room such as closet doors, doors to private toilets, etc.
- g. Small Buildings. For small buildings without a headhouse or wing, three digits, or a letter and two digits, will suffice (except for mezzanine spaces), for example:
- B01, B02, B03, etc., for basement spaces
 - G01, G02, etc., for ground floor spaces
 - 101, 102, etc., for first floor spaces
 - M1-01, M1-02, etc., for mezzanine spaces
- h. Exterior Doors. For location and identification purposes, exterior door openings are assigned the same numbers and symbols they were given on the architectural working drawings.

PART 4. CHECKLISTS

19. CHECKLIST FOR ASSIGNMENT SITE PLAN.

Alleys, public and private (Note)

Allowance for:

Future street widening

Future alley widening

Future addition to building

Areas and Volume:

Grand totals

Breakdown of P.O. area, if any

Areaways

Coal Doors (Note)

Coal Holes (Note)

Compass: Locate within outline of building

Curbs:

Driveway

Lot

Street

Dimensions:

Distance from street curbs to property lines

Overall (building)

Paved trucking area

Property lines

Property lines to building, at first story

Width of driveways

Width of sidewalks

Elevations (levels): (do not underline)

First floor (within outline of building)

Finished grades:

1. Corners of property

2. Entrances to building

3. Principal corners of building

4. Both ends of driveway

5. Corners of trucking area

Encroachments (Note)

Extensions, future: (Note) (Indicate by dotted lines)

Flagpoles, ground (Note)

Fences (Note)

Grass Areas (Note)

Heights of Stories and Basements (show on section diagram)

Names of streets and avenues

Planting areas (Note)

Sidewalk (Note)

Steps:

Area
Entrance
Indented

Symbols:

Building entrances
Compass
Standard graphic scale and numerical scale
Title of Building (within outline of building)
(underline)
Walks (Note)

20. CHECKLIST FOR ALL ASSIGNMENT FLOOR AND ROOF PLANS.

Additional stories (see par. 14)

Areas of each floor: (in square feet)

Rooms or spaces, individually
Net Agency including Custodial Areas (except P.O.)
Net Post Office Areas, if any
Construction, Mechanical, and Circulation Areas
Gross Areas

Assignment of Room Numbers

Areaways

Bulletin Boards (Note)

Cabinets:

Fire Extinguisher Rack (Note)
Fire Hose (Note)
First Aid and Medicine (Note "F.A.C.")
Key (Note)

Card Holders: Do not indicate

Closets: (Note)

Coat
Linen
Service
Wire

Coal Doors or Coal Holes (Note)

Columns and Piers

Corridors:

Private
Public

Counters

Custodial Rooms (Note)

Desks

Dimensions, exterior:

On first floor plan
On plan of upper floor that is set back

Directory Boards (Note)

Doors:

Swing

Number

Drinking Fountains (Note "D.F." or "E.W.C.")

Elevators:

Dumbwaiters

Escalators

Passenger

Private

Service

Flagpole (if roof flagpole, indicate on roof plan)

Furniture, built-in:

Bookcases

Counters

Platforms

Railings

Gear Rooms

Live Loads: Note on each floor

Lobbies:

Elevator

Post Office

Public

Lobby Desks: Note "Desk"

Locker Rooms: Layout of lockers, by dotted lines

Lookout System

Maintenance and Repair Rooms:

Airconditioning

Boiler (indicate boiler and sink)

Elevator Machinery

Fan

Fuel

Incinerator

Pump

Radio - TV

Partitions:

Glazed (note "Gl. Part.")

Bank type

Ceiling high

Platforms:

Loading (Note)

Mailing (Note)

Recesses:

Telephone (Note)

Fire Extinguisher (Note)

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Roofs:

Lower (shown on floor plan above)
Penthouse, walks, flagpole access, etc.

Shafts:

Airconditioning
Chutes
Lookout
Pipe and Wire
Ventilating

Stacks:

Boiler
Incinerator

Stairs (indicate "up" or "down" by note and arrow)

Steps:

Areaway (Note "up" or "down")
Entrance (Note "up" or "down")
Indented (Note "up" or "down")

Symbols:

Building entrances
Compass (on each floor plan)
Standard graphic and numerical scale

Telephone Recess (Note)

Telephone Suite:

Frame Room
Rest Room and Toilet
Switchboard Room

Title, under drawing on sheet, underlined

Titles of Rooms or Spaces:

Name of Room

Name of Governmental Department or Agency and the next
lowest subdivision, by exterior lines showing limits of
space allotted:

Example: JUSTICE DEPARTMENT
U. S. MARSHAL

Toilets: (male and female)

Employees
Private
Public

Vaults:

Standard
Transformer

Vestibules: (Note)

Employees
Entrance
Mailing

CHAPTER 13.
CAST ORNAMENT, CARVED
WORK, MURAL PAINTINGS

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CHAPTER 13. CAST ORNAMENT, CARVED WORK, AND MURAL PAINTINGS

PART 1. ARCHITECTURAL MODELS

1. DESCRIPTION. Architectural models are made by a craftsman who accurately follows a full-size detail accompanied by a scale detail, both made for him by PBS, or by the contract architect. The modeler is not required to originate the design, only to execute and interpret it accurately in plastic material and then to cast it in plaster. The items modeled are ornamental details of the building. Architectural models are always made full-size; or over-size if required at shrinkage scale for terra cotta or metal. (See Glossary, chap. 16, below, for the definition of "Shrinkage Scale.")
2. ITEMS REQUIRING ARCHITECTURAL MODELS. Architectural models are always required for any cast or carved ornament. Models are not required for carving if the carving can be executed satisfactorily from full-size drawings of geometric design.
3. INDICATING PORTIONS TO BE MODELED. On the final working drawings, the ornamental features that will require models should be indicated by bounding them with extra heavy broken lines (see Design Data 28-1-5). Ordinarily they should be indicated also on the intermediate working drawings.
4. METHOD OF NUMBERING. Numbers in sequence shall be assigned to those items on the working drawings that are to be modeled, beginning with "Model #1".
5. MODEL SCHEDULE (ARCHITECTURAL).
 - a. Listing the Models. After the items to be modeled have been indicated on the working drawing, PBS architects (or the contract architect) must fill in a model schedule using a form entitled "Model Schedule (Architectural)" (see appendix A). On this schedule, the architectural models are listed in numerical order and the material of each model is to be noted, for example: aluminum, wood, or marble. The materials must conform to those specified in the original construction contract base bid. Material alternates are not to be listed.
 - b. Reference to Working Drawings. In the column headed "Drawing Number" there is entered the number of the working drawing on which the item has been indicated by broken lines.

c. Shrinkage Scale. For an explanation of "Shrinkage Scale", see the glossary in chap. 16, below.

6. MODEL CONTRACT (ARCHITECTURAL).

a. The contract for the architectural models is always separate from the construction contract for the building project. Only those final working drawings upon which the design and area covered by the models are indicated, the model schedule and specifications, are furnished for competitive bidding to recognized architectural modelers.

b. The items for which models are required are furnished and installed under the construction contract.

PART 2. SCULPTURAL MODELS

7. DESCRIPTION. Unlike the architectural features that are portrayed by architectural models, sculptural items are in the domain of fine art, and often involve symbolism and the representation of abstract ideas. The sculptor is expected to create an original and appropriate concept. He makes the models himself and often executes the carving of stone. The models may be full-size or less than full-size.
8. ITEMS REQUIRING SCULPTURAL MODELS. Freestanding figures and groups, or a decorative bas-relief, are the items for which sculptural models are most frequently required. Fine arts items must be approved by the Assistant Commissioner for Design and Construction before working drawings and specifications are begun.
9. INDICATING PORTIONS TO BE MODELED. On the final working drawings, the sculptural portions that will require models should be indicated by bounding them with extra heavy broken lines (see Design Data 28-1-5). Ordinarily they should be indicated also on the intermediate working drawings.
10. METHOD OF IDENTIFYING SCULPTURAL MODELS. Capital letters are assigned to the items on the working drawings that require sculptural models, beginning with "Model A", and continuing alphabetically.
11. SCULPTURAL ITEMS ON WORKING DRAWINGS. The following must be indicated on the working drawings and specified for inclusion in the construction contract:
 - a. Stone for sculptural carving, if applied to, or built into the building. On the final working drawings this note shall appear:

"Jointing shall be as directed by the Government".
 - b. Precast material for sculptural embellishment. (This is delivered to the job in its finished state for installation by the contractor.)
 - c. Material cast on the job in architectural concrete or the like. The general contractor will use a waste mold furnished by the sculptor and delivered to him by PBS.
 - d. Foundations and stone for bases for freestanding sculpture.

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12. MODEL SCHEDULE (SCULPTURAL).

a. Listing the Models. After the items to be modeled have been indicated on the working drawings, PBS architects (or the contract architect) must fill in a model schedule using a form entitled "Model Schedule (Sculptural)" (see appendix A). On this schedule the sculptural models are to be listed alphabetically in capital letters and the material of which each item is modeled is to be noted, for example: aluminum, granite, or marble. The materials must conform to those specified in the original construction contract base bid. Material alternates are not to be listed.

b. Reference to Working Drawings. In the column headed "Drawing Number", the number of the working drawings on which the item has been indicated by broken lines should be entered.

c. Shrinkage Scale. For an explanation of "Shrinkage Scale", see the glossary in chap. 16, below.

13. SCULPTURAL CONTRACTS. The contracts for the sculptural models are always separated from the construction contract of the building project. Only those final working drawings upon which the design and area covered by the models are indicated, the model schedule and specifications, are furnished for competition or selection of the sculptor.

PART 3. MURAL PAINTINGS

14. DESCRIPTION. In a Federal building, mural paintings are painted on, or applied to, the walls of public lobbies, courtrooms, or other spaces of architectural significance. They are in the domain of fine art and often include historical scenes, as well as symbolism or the representation of abstract ideas. Replicas of city or State seals are not acceptable for Federal Buildings. Murals, unless they are specifically authorized for the project, are not provided.
15. INDICATING LOCATION OF MURAL PAINTINGS. When mural paintings are to be provided, their location must be noted on the tentative sketches; and their location and extent noted on the Intermediate working drawings and the final working drawings.
16. MURAL CONTRACTS. The contracts for mural paintings are always separate from the construction contract of the building project. Only those final working drawings upon which the design and area covered by the murals are indicated, the list of murals and specifications, are furnished for competition or selection of the painter. Mural paintings are usually applied or installed after the building has been completed.
17. APPROVAL OF MURAL STUDIES. The selected painter must submit small studies, in color, for the approval of the Assistant Commissioner for Design and Construction, before developing the full-size mural paintings.

CHAPTER 14.
FULL-SIZE DETAILS

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CHAPTER 14. FULL-SIZE DETAILS

1. GENERAL.

a. Full-size details shall not be made until after the construction contract has been awarded. Generally, these details are not drawn on the final working drawings, but full-size details of any special designed windows should be included to advise bidders that the typical stock manufactured windows are not acceptable. Certain profiles may also be drawn when necessary to clarify the details for bidders.

b. The full-size details should be limited to contours and line drawings of moldings, ornament, or decoration for clear exposition of the detail. It is assumed that the construction behind the contours of moldings, cornices, and other elements of this character has been adequately developed at 3/4" scale, or at a scale large enough to explain the construction thoroughly.

2. ITEMS TO BE FULL-SIZE. Generally, full-size details will be limited to the following items, but other items may be included if they are necessary for the project:

Construction sign, if special design is required

Special designated windows

Cornerstone or date stone, if special design is required

Profiles of terra cotta, stonework, and other masonry

Elevations and sections for architectural models

Elevations and sections of cast or carved ornament

Ground brickwork, arches, etc.

Profiles of exterior millwork

Profiles of interior cabinetwork, millwork, cornices, trim, ornament, etc.

One of each letter used in the building title

All molded or ornamental work in relief, interior and exterior, for architectural models.

Note: Full-size drawings of standard construction sign letters, and standard cornerstone inscription, will be furnished by the Government.

3. SEQUENCE OF PREPARATION. The full-size details shall be produced in the sequence that will best correspond with the progress of the contractor's work. The cornerstone or date stone detail may be the first, if required. Profiles and models for terra cotta are next.

4. WORK RELATED TO METAL WINDOWS. When metal windows are specified, and a sample of the window is required, full-size details are not to be made if 3" details are indicated on working drawings. Metal sash shop drawings should be among the first submitted by the construction contractor to the architect-engineer for approval.
5. ARCHITECTURAL MODELS. Full-size details shall be provided for work on which architectural models are required for casting or carving, in the sequence given in par. 3, above.
6. SUBMISSION OF DETAILS.
 - a. Tracings of full-size details, except those affecting the design of the building, shall be submitted by the contract architect-engineer to the Contracting Officer for approval before issuance of prints to the construction contractor and construction engineer.
 - b. The tracings of full-size details affecting design, such as building title lettering, ornamentation, etc., shall be submitted to the Central Office for approval. These will be forwarded by the Central Office to the Contracting Officer.
7. DUPLICATION AND DISTRIBUTION.
 - a. PBS will print and distribute the copies of the full-size details to:

Contractor	5 copies
Construction Engineer	1 copy
Contract Architect-Engineer	1 copy
Modeler (if models are indicated)	1 copy
 - b. The approved original full-size details will be retained by the Contracting Officer.
8. SIZE OF DRAWINGS. Architectural full-size drawings should not be more than 10 feet in length nor more than 40" wide. The sheets should not be smaller than no. 5 size (36" x 24").
9. MATERIALS TO BE USED. Soft pencil on white rag paper shall be used. The paper shall be suitable for permanent record and tough enough to withstand frequent folding and handling, but not so heavy that it will not yield satisfactory prints.

10. NUMBERING THE DRAWINGS. The drawings should be numbered consecutively in the order of preparation. The numbering system is explained in chap. 3-1, above.
11. TITLES. The title of a drawing must indicate its subject matter. Model numbers are not acceptable as titles.

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CHAPTER 15. SHOP DRAWINGS

PART 1. SUBMISSION OF SHOP DRAWINGS

1. SPECIFICATION REFERENCE. The specifications shall state the items for which shop drawings are required (under headings such as ORNAMENTAL IRON, etc.), the number of copies, and to whom they are to be submitted.
2. TO WHOM SUBMITTED.
 - a. All shop drawings for projects designed by the Central Office and the regional offices shall be submitted by the construction contractor to the Contracting Officer.
 - b. Shop drawings for contract architect-engineer projects shall be submitted by the construction contractor to the contract architect-engineer.
 - c. The mechanical specifications will require the construction contractor to submit certain items of mechanical and electrical equipment direct to the contract architect-engineer for preliminary approval. The contract architect-engineer will forward this submission to the Contracting Officer for final approval.
3. DRAWINGS REQUIRED. Unless otherwise required by the construction contract, the construction contractor is required to submit one black-on-white print and one master reproducible print (black-on-white) made by a process suitable to the Contracting Officer. Each shop drawing is required to have a blank area of 5" x 5" adjacent to the title block for stamps of approval.
4. CONTRACTOR'S APPROVAL OF SHOP DRAWINGS. In accordance with the General Conditions of the specifications, the submitted shop drawings shall bear the stamp of approval by the construction contractor. Any drawings submitted without this stamp of approval may not receive consideration and may be returned to the contractor for resubmission.
5. RESERVED.

PART 2. CHECKING THE SHOP DRAWINGS

6. SCOPE. Shop drawings must be checked against all of the classes of drawings and specifications to which they apply, as follows:

Drawings

Amendment
Contract
Contract Change
Full-size
Revised
Shop (approved for related construction)
Supplementary

Specifications

Amendment
Contract
Contract Change
Supplementary

7. MARKING SHOP DRAWINGS. Red crayon shall be used for all notes and for errors and discrepancies, marking them on the face of the print. Markings on reproducibles shall be made with a medium such as India ink or heavy non-smudging black pencil which will reproduce clearly and will stand out in such a manner that they will not be overlooked because of lack of color.
8. MATERIALS. The materials shall be checked for conformity with the drawings, specifications, and alternates.
9. COMPLETENESS. The shop drawing should completely cover the item. If it does not, a note of omissions or deficiencies should be made.
10. DIMENSIONS. The dimensions should be checked and any that are incorrect should be circled. A question mark is put where a dimension is omitted. Correctness of dimensions is the responsibility of the contractor, so ordinarily dimensions are not to be supplied by the reviewer on a shop drawing.
11. MASONRY JOINTING. Both vertical and horizontal jointing is to be checked to verify conformance with the jointing shown on the contract drawings.

12. ANCHORING. Materials, size, and location should be checked. Anchors of structural members as well as anchors for masonry or other facing must be checked by structural engineers of PBS, or the contract architect-engineer, as the case may be.
13. METAL AND WOOD JOINTS. The reviewer should see that all joints in metal and woodwork are inconspicuous and that they have a minimum of exposed fastenings.
14. PROFILES. The profiles should be checked for conformity with the full-size details, large scale contract drawing, or manufacturer's standard shop drawing. If a manufacturer's profile does not exactly conform to PBS drawings, it may nevertheless be approved if the changes are minor.
15. HARDWARE.
 - a. Drawings and literature on builders hardware must be submitted to the Contracting Officer for approval. These should be checked against the "Chart of Builders Hardware Samples on File in Washington, D. C.", copies of which have been supplied to the regional offices. Samples need not be submitted for those items of approved hardware which appear on the chart.
 - b. Approval of the shop drawing for an item does not include approval of the hardware indicated on that drawing. For example, the hardware of a metal window.
 - c. Before any hardware is ordered for the building, the construction contractor shall be required to submit a complete hardware schedule which shall indicate by symbol the keying, all master keyed groups, and the grand master system.
16. COLORS AND FINISHES. These should be marked "Approved subject to approval of samples".
17. RESERVED.

PART 3. CORRECTIONS AND APPROVALS

18. SCOPE OF APPROVAL.

a. The approval stamp of the construction contractor on a shop drawing presupposes that the drawing had been checked and coordinated with the work of other trades involved before they are submitted to the Contracting Officer or to the architect-engineer for approval.

b. On contract architect-engineer projects, structural and mechanical shop drawings should be checked by the engineers responsible for the structural and mechanical design, before the written approval of the contract architect-engineer is placed on them.

19. MINOR ERRORS. Minor errors should be marked in red crayon on all copies of the shop drawings, or on the reproducible. Shop drawings may be approved subject to such minor corrections. This approval should be indicated in writing on all prints of the drawings, or on the reproducible.

20. MAJOR ERRORS. If major errors or discrepancies are found, the drawings shall be returned to the construction contractor for correction and resubmission, retaining one set for reference.

21. CHANGES IN CONTRACT.

a. On projects designed by a regional office or by a contract architect-engineer, approval of a shop drawing involving a change in contract requirements, whether with or without additional cost, is the responsibility of the Contracting Officer.

b. Where a project is designed by the Central Office, any shop drawing that involves a change in contract requirements, with or without additional cost, must have the approval of the Central Office.

c. A shop drawing which indicates minor departures from the contract requirements in that it represents a manufacturer's standard shop practice, may be approved.

22. SHOP DRAWING STAMPS.

a. After the shop drawings are checked and the corrections, if any, are marked thereon, the "Shop Drawing Stamp" is placed on the face of the reproducible and the print in the blank space adjacent to the title block.

b. The following illustration shows the Shop Drawing Stamp. It is used in the Central Office on all shop drawings:

GENERAL SERVICES ADMINISTRATION			
OFFICE OF DESIGN AND CONSTRUCTION PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.			
APPROVED WITH CORRECTIONS NOTED, SUBJECT TO THE PROVISIONS OF THE ARTICLE ENTITLED "SHOP DRAWINGS" IN THE GENERAL CONDITIONS.			
PROJECT			
LOCATION			
CHECKED BY		DATE	
DRAWING NO.	24-		

c. The stamp to be used in all regional offices is shown below:

GENERAL SERVICES ADMINISTRATION			
DESIGN AND CONSTRUCTION DIVISION PUBLIC BUILDINGS SERVICE REGION _____ CITY _____ STATE _____			
APPROVED WITH CORRECTIONS NOTED, SUBJECT TO THE PROVISIONS OF THE ARTICLE ENTITLED "SHOP DRAWINGS" IN THE GENERAL CONDITIONS.			
PROJECT			
LOCATION			
CHECKED BY		DATE	
DRAWING NO.			

d. The stamp used by all contract architects, or engineers, will have an additional box at the top of the Shop Drawing Stamp, like this:

SMITH, BLANK AND SMITH ARCHITECTS - ENGINEERS
--

23. FILLING IN THE SHOP DRAWING STAMP. The name and location of the project shall be filled in with red crayon; by whom checked (last name spelled out) and the date; and the shop drawing number.

24. NUMBERING THE SHOP DRAWING.

a. Each shop drawing shall be assigned a tentative number, written in crayon above the title block, as soon as it is received. In no case, however, shall the approval stamp be placed on the shop drawing until it is approved. If rejected and resubmitted, a suffix letter shall be added to the tentative number, as "24-1A". If again rejected and resubmitted, the suffix letter shall again be changed, as "24-1B", and so on until the shop drawing is approved. Only after approval shall the stamp and permanent number be placed in the space provided for this purpose.

b. Architectural shop drawings shall be numbered serially with a prefix symbol "24", such as: 24-1, 24-2.

c. Structural shop drawings shall be numbered serially with a prefix symbol "25", such as: 25-1, 25-2.

d. The symbol "26" is used for mechanical-electrical shop drawings, for example: 26-1, 26-2.

25. DISTRIBUTION.

a. After the shop drawings are approved, distribution shall be made as follows:

Contract A-E Projects

Original print with red notations retained by the architect-engineer.

One print of marked reproducible to the construction engineer at site.

One print of marked reproducible to the office file of the Contracting Officer.

Marked reproducible to the construction contractor.

CO or RO Design

Original print with red notations, and one print of marked reproducible for the office file.

One print of marked reproducible to construction engineer.

Marked reproducible to construction contractor.

For contract A-E projects, the architect-engineer shall furnish the above two prints of marked reproducibles, and additional prints when so requested. In those cases where the construction contract requires or permits multiple copies to be submitted in lieu of the reproducible print, corrections shall be marked in red crayon on all copies; and the additional marked copies not required by the construction engineer, the Contracting Officer, and the office file, shall be sent to the construction contractor.

b. Copies of the contract architect-engineer's letters transmitting approved shop drawings to the construction contractor must be forwarded to the construction engineer and to the Contracting Officer.

26. CATALOG CUTS. The construction contractor may submit catalog cuts for standard products meeting specified requirements without special fabrication. The same procedure shall be followed for checking and numbering catalog cuts as required for shop drawings. Since multiple copies of catalog cuts are required, all copies submitted by the construction contractor shall be marked and those marked copies not required by the construction engineer, the office file, and the Contracting Officer shall be sent to the construction contractor. Copies of contract architect-engineer's letters transmitting approved catalog cuts to the construction contractor must be forwarded to the construction engineer and the Contracting Officer.

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CHAPTER 16. GLOSSARY

1. COVERAGE. Only terms having a special PBS meaning are covered in this glossary. Terms defined satisfactorily in standard or technical dictionaries are not included.
2. ALPHABETICAL KEY. Terms of more than one word are usually alphabetized by the noun, not by the qualifying words; for example, to find Gross Area or Net Agency Area, look under AREA; for Contract Change Drawing or Revised Drawing, see DRAWINGS. In a few instances when the qualifying word is the significant factor, it is used as the alphabetical key; as LOOKOUT SYSTEM, under L, not under S.
3. LIST OF TERMS. Following is a list of terms with explanations:

ALTERNATE

A substitute design, material, or method of construction for which a separate price is desired.

ASSIGNMENT PLAN (See chap. 12-1, above.)

AREA (See chap. 4, above.)

AREAWAY.

Wall-enclosed space below grade, extending outward from the exterior face of a building, to provide natural light and ventilation for a window, steps, entrance to a door, or other opening below grade.

BID.

Sum of money for which the bidder proposes to build a structure and/or furnish material if awarded the contract. (Compare "Proposal".)

BLOCK BUILDING.

Usually a building without courts or wings (like the Merchandise Mart in Chicago, or the General Accounting Office, Washington, D.C.); a building may also be partly "block" type in the lower stories and partly wing or court type in the upper stories.

BONDS

On a construction contract bid, performance and payment bonds are required only when the sum of the contract is in excess of \$2,000; on demolition contracts, payment bonds are generally not required and the requirement for performance bonds is optional with the Government.

Bid Bond

A bid guarantee bond, or certified check, for 20% of the amount of the bid but in no case more than \$3,000,000, required as a guarantee that the bidder will not withdraw the bid and that, if he receives the award, he will enter into a formal contract and give performance and payment bonds as required. In event of default, the bidder and his surety becomes liable for any resulting loss to the Government.

Performance Bond

A guarantee, representing 100% of the amount of the bid, that the contractor will perform the contract in accordance with its terms. In the event of default, the contractor and his surety are liable for any resulting loss to the Government.

Payment Bond.

A guarantee, representing 50% of the amount of the bid, that the contractor will make payment promptly to all who supply labor and material in the execution of the work. This bond, in the stated amount, is required by law and provides that persons furnishing labor and materials may sue on the bond if they have not been paid within ninety days after the last of the labor was performed or the material was furnished by them.

BOX NESTINGS

Standard assembly of post office lock boxes and drawers. It is delivered on the job fully assembled and installed in the post office screenline.

BREAKOUT (DOOR)

Space or door in a lookout system through which a post office inspector passes to apprehend an offender.

CASH ALLOWANCE

A lump sum stated in the construction specifications, which is to be included in the bid, to cover the cost of a specific item or part of the work, such as carving, sculpture, or special equipment.

CLEANING GEAR

Equipment such as vacuum cleaners, scrubbing and polishing machines, mop trucks, ladders, etc., used in maintaining and operating buildings.

CLOSET

A storage room less than 100 square feet in area.

COUNTERLINE

A continuous counter, with cabinets underneath, which separates the post office workroom from the public lobby.

COVER SHEET

The top sheet of the final working drawings

DESIGN DATA

The recommended design for any feature of a structure or its equipment, a tabulation of data, or a drafting symbol or method prepared by PBS for use by architects or engineers as a guide in preparing drawings or documents. Design Data are printed on yellow paper.

DIAGRAMMATIC SKETCHES (See chap. 5-1, above.)

DRAWING, SINGLE-LINE DOUBLE-LINE

In a single-line drawing, the walls and partitions are indicated by a single lines (Drawings 20-1 and 2, appendix B) in contrast to double-line drawings (Drawings 21-2, 3, etc., appendix C.)

DRAWINGS (General Classes)

Amendment Drawings

Drawings that may be required to accompany Amendment Specifications. (See "SPECIFICATIONS".)

Construction Drawings

Prints of the final working drawings sent to bidders after approval and clearance by PBS, but on which no contract has yet been signed.

Construction Sequence Drawings

When a building is extended or remodeled while it is occupied, temporary partitions and other facilities may be installed so that the occupancy of the building may continue. A sequence of operations is then devised by PBS in conjunction with the occupying agencies, so that the work may be performed with minimum disturbance to the occupants of the building. The architect indicates this sequence as Operation No. 1, 2, 3, etc., on "Construction Sequence Drawings".

Contract Drawings

After a construction contract based upon the Construction Drawings has been mutually signed by the bidder and by the Contracting Officer for the Public Buildings Service, the Construction Drawings become legal documents known as "Contract Drawings".

Contract Change Drawings

After the award of a contract, drawings covering changes in the work are called "Contract Change Drawings," on the basis of which the Contractor is requested to submit a proposal to make the changes. (See Design Data 28-1-21.)

Final Working Drawings

The Working Drawings at completed stage, ready for approval and clearance by PBS.

General Drawings

These include the survey, site plan, and the architectural floor and roof plans, elevations and sections. They do not include the architectural detail drawings or the structural and mechanical-electrical drawings.

Intermediate Working Drawings

The Working Drawings at a partial stage of completion, usually prepared and submitted after the Tentative Sketches have been approved and before the submission of the Final Working Drawings.

Preliminary Drawings

General name applying to the drawings that precede the working drawings; namely, the Diagrammatic Sketches, Tentative Sketches, and the perspective.

Revised Drawings

If a Working Drawing is revised after it has been initialed by authorized officials in the Central Office or regional office and sent to bidders, it is called a "Revised Drawing". All the numbers on the original Working Drawing will be reused with an "A" added to each drawing number, "B" if a second revision of the original drawing is made, etc.

Shop Drawings

Complete and detailed working drawings prepared by a manufacturer or fabricator, from which he makes or assembles a product in his shop. They are also prepared as guides for assembling equipment on the job.

DRIPSTONE (See "SPLASHBLOCK.")

DRIVEWAY

A project road for vehicular traffic within the property.
(See "TRUCKING AREA")

DRIVEWAY ENTRANCE

Paved drive from the street to a trucking area or to the driveway opening of a building.

DRIVEWAY OPENING

Entrance to a building for vehicles proceeding to terminal facilities located within the building.

DROPS

Small openings in a post office screenline through which the public may insert stamped mail and packages.

DROPS PANEL or MAIL DROP UNIT

Standard panel, in post office screenline, S.D. 6-16-22.

For Repair Work only (See Design Data 28-9-58).

EQUIPMENT

- (a) Built-in - this is designed by the architect and fully detailed in accordance with the Design Data, and is furnished and installed under the construction contract.
- (b) Fixed - this is furnished by the Government. The contract usually stipulates that the construction contractor shall install the furniture by securing it in place.
- (c) Movable - this is furnished and placed by the Government.

FILE ROOM

A space for storage of office supplies in metal cabinets. Enclosing partitions may be of the permanent or movable type, and a fire rated enclosure is seldom required. Spaces for storage in General Office Space are generally file rooms.

GEAR ROOM

Large buildings are usually provided with various kinds of cleaning apparatus or "gear". This gear consists of scrubbing machines, polishing machines, mop trucks, vacuum cleaners, hand trucks, ladders, etc. Rooms, with service sinks, for storing this gear should be provided near the building service freight elevators. (Design Data 28-12-1.)

GENERAL OFFICE SPACE

Large, open space laid out on a modular basis suitable and available for general assignment to tenant agencies having average office functions without special requirements. Partitioning within such space is of the movable type, generally full height, and is laid out on the modular lines provided in the basic design.

HEIGHT

Clear Ceiling

The dimension from the finish floor level to the principal level of the ceiling, disregarding breaks, molding, beams, girders, etc.

Story

The dimension from a finish floor level to the finish floor level of the story next above.

LOADING PLATFORM

Platform on the outside of a building or at the edge of a trucking area within the building, against which trucks stand to load or unload goods. The equivalent designation for a post office is "Mailing Platform".

LOBBY, BOX

Separate lobby in front of the box nestings in a post office.

LOBBY, POST OFFICE

The space on the public's side of the post office counterline. (In a building housing a post office and other Federal activities, the "public lobby" is always separate from the "post office lobby".)

LOBBY, PUBLIC

Space inside the public entrance of a building affording circulation for the general public to or from other parts of the building. (Compare "POST OFFICE LOBBY".)

LOCK BOX

A locked compartment in a post office screenline for rent to the public, in which mail for the rentor is placed.

LOOKOUT GUARD RAIL

Placed around open shafts or change in floor level in a lookout system, for protection of inspectors.

LOOKOUT SYSTEM (LOOKOUT GALLERY AND SHAFT)

Enclosed passageway in a post office from which inspectors may observe the workers.

LOOKOUT VENT

Opening for circulation of air in lookout system.

LOT CURB

Curb placed at property line.

MAILING PLATFORM

Platform on the outside of a post office or at the edge of a trucking area within a post office, against which trucks stand to load or unload mail and supplies.

MAILING VESTIBULE

Partitioned area in a post office between the mailing platform and the work room. The Mailing Vestibule serves as a weather-break and as temporary storage for hand trucks, mail awaiting trucks, mail delivered by collectors, empty mailbags, etc.

NOTE PANEL

Space at right side of a tentative sketch or working drawing in which general notes are placed. (See Design Data 28-1-2.)

OBSERVATION UNIT

Wall Type

Prefabricated unit in wall of lookout system. Furnished by the Government for installation by the contractor.

Door Type

Glazed panel in breakout doors of lookout system. The one-way vision glass is furnished and installed by the contractor.

Floor Type

Prefabricated unit, including observation hole, in floor of lookout system. Furnished and installed by the contractor.

PERMANENT (OR FIXED) PARTITION

A partition constructed in such a manner that it cannot be removed and reused. Masonry, concrete, steel stud and plaster, wood stud and plaster, and gypsum-faced partitions having taped joints are permanent partitions.

POST OFFICE COUNTERLINE (See Counterline)

PROJECT DIRECTIVE

Essential information about the design, construction, materials, finishes, and equipment, as well as a financial breakdown. The data is entered on forms provided by PBS.

PROPOSAL

Amount quoted by the contractor as the additional sum to be paid or the credit allowed the Government for any postcontract change. (Compare "BID").

RESERVATIONS

A lump sum covering the cost of items or service to be furnished, but which are not included in the construction contract; for example, exhibit case of historic documents; soil tests and borings; testing of material, etc.

SCALE DETAIL

Sketch of any item, developed at a larger scale than that of the floor plans or elevations, but at less than full-size.

SCALE PIT

Space under platform of a large scale to accomodate the operating mechanism.

SCALE WELL

Depression in parcel post counter in which to set a scale for weighing mail.

SCREENLINE

A partition containing lock box nestings, blank panels for future nestings, and letter drop units, which separate the post office workroom from the box lobby.

SERVICE CORRIDOR

Corridor required exclusively for access to service areas or equipment. It is not generally used by the public.

SHOWN

Drawn, sketched, detailed, noted, etc., on drawings.

SHRINKAGE SCALE

A scale furnished by material manufacturers, for advance allowance of shrinkage on models used as patterns for casting materials which contract during production; for example: terra cotta, metals, clays, etc.

SPACE DIRECTIVE (See chap. 4-1, above)

SPECIFICATIONS

Amendment Specifications

Additional specifications issued to all prospective bidders, after the original specifications and drawings for a project have been sent out for bids, but before bids have been received. Occasionally an Amendment Specifications is sent out with the original release of specifications to bidders.

Construction Specifications

The completed printed specifications as released to bidders.

Contract Specifications

After a construction contract has been mutually signed by the bidder and PBS, the construction specifications on which the contract was awarded become legal documents known as "Contract Specifications."

Contract Change Specifications

After the award of a contract, specifications covering changes in the work are called "Contract Change Specifications", on the basis of which the contractor is requested to submit a proposal to make the changes.

Federal Specifications

These are clear and accurate descriptions of the minimum requirements for quality and construction of materials and equipment necessary for an acceptable product. A Federal Specification is included in the construction specifications by reference to its identifying symbol; for example, TT-C-598.

Federal Standards

Federal Standards establish engineering or technical limitations and applications for materials, processes, methods, and design, with the aim of achieving the highest practical degree of uniformity in materials and products. Federal Standards are identified by the designation Fed. Std. No. _____.

Guide Specifications

These are specifications prepared for various categories of work, materials, or equipment which are used by the specification writer as guides in preparing the project specification. Guide specifications should be edited and the proper insertions and deletions made to suit the requirements of the particular project. The Guide Specifications were formerly designated "Stock Specifications".

Standard Specifications

Standard specifications are those which cover principal classes of work, materials, and equipment. They supplement the project specification and such portions as are applicable are cited in the project specifications by reference to paragraph numbers. The text of the Standard Specification is not repeated in the project specification.

SPLASHBLOCK

A concrete block placed at grade level at the foot of a downspout, shaped to lead water away from the building and prevent washing away of soil; also a piece of slate at the foot of a downspout, on an intermediate roof, to prevent washing away of roof gravel.

SPOT ELEVATION AND SPOT GRADE

Reference points to establish fixed finish elevations or grades, as noted on the site plan.

STAMPED PAPER

Postage stamps, stamped envelopes, stamped wrapper, postal cards, postal savings stamps, revenue stamps, etc.

STANDARD DETAIL

A scale detail of some part of a structure or its equipment, copies of which can be incorporated without change within the Final Working Drawings and specifications for a project. Standard Details are printed on white paper by PBS.

STORAGE ROOM

A permanent space for bulk storage of materials, and generally requiring a two-hour fire rated enclosure if larger than 100 square feet in area.

SURVEY

Property Line and Utilities Survey and Drawings. Topographic Survey and Drawings.

SWING ROOM

Space where workers assemble before or after a tour of duty, to change clothes, or for recreation, etc.

TABLET

A thin slab of metal or other suitable material bearing a commemorative inscription. Tablets are provided only on projects designated by the Assistant Commissioner for Design and Construction.

TELLTALE

Hanging fringe of cords placed on both sides of low beams and other ceiling obstructions in lookout systems to protect postal inspectors from injury.

TENTATIVE SKETCHES (See Chap. 6-1, above.)

TITLE (of building)

Inscription on main facade identifying the building; such as "Federal Building, United States Post Office". (See chapter 6-21, above)

PBS P 3410.2B
August 7, 1964

TRUCKING AREA

Paved area for maneuvering vehicles, usually adjoining an exterior or interior loading or mailing platform.

VOLUME (of building)

(See chap. 4-14, above, for the method of computing.)

WITNESS MARK

Straight or angle line ending in an arrowhead, connecting a note to that portion of a drawing to which the note refers.

<u>Form No.</u>	<u>Title</u>
GSA 261	Space Directive (General) (10 Sheets)
PBS 143	Space Directive Change
GSA 123L	EST Project Directive Budget (Budget)
GSA 123b	EST Project Directive Budget (for office use)
GSA 123c	EST Project Directive Estimate (General Contract)
GSA 123c (Con.)	EST Project Directive Estimate (General Contract)
GSA 123D	EST Project Directive Reservations
GSA 123E	A Project Directive Site Development
GSA 123F	A Project Directive Exterior Materials
GSA 123G	A Project Directive Interior Materials
GSA 123H	A Project Directive Interior Finishes (7 Sheets)
GSA 123i	S Project Directive Structural
GSA 123J	ME Project Directive Mechanical and Electrical (Sheets 1 & 2)
GSA 123K	DS Project Directive Fire Safety
GSA 1647A	EST Remodeling Project Directive Budget Estimate
GSA 1647B	EST Remodeling Project Directive Estimate (General Contract)
GSA 1647C	DS Remodeling Project Directive Interior Materials
GSA 1647D	DS Remodeling Project Directive Miscellaneous
GSA 1647E	ME Remodeling Project Directive Mechanical
GSA 124	Change in Approved Project Directive
- -	Model Schedule (Architectural)
- -	Model Schedule (Sculptural)
PB-13	Request for Contract Change (CCC)

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 1 OF 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000
STREET W. King St., and S. Maple Ave.	CITY TRENT	STATE IOWA

CHARACTER OF PROJECT New Building	OPERATED BY
---	-------------

(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES MALE FEMALE	
--	--	-----------------	-------------------	------------	--------------------------	--

S U M M A R Y

Post Office				23,155	Incomplete	
District Courts (Including Attorney-Marshall)				8,575	14	8
Agriculture				4,275	16	8
Civil Service				450	-	-
Defense				700	3	
General Services				3,800	10	3
Health, Education & Welfare				320	1	
Interior				1,500	4	1
Treasury				1,650	7	4
Total Space Requested				44,425	Incomplete	

APPROVED BY	OFFICE	DATE
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Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE				SPACE DIRECTIVE (GENERAL)			
				SHEET 2 OF 10 SHEETS			
PROJECT TITLE				PROJECT NO.			
Post Office and Court House				00-000			
STREET		CITY		STATE			
		TRENT		IOWA			
CHARACTER OF PROJECT				OPERATED BY			
New Building							
(1) DIVISION OR AGENCY	(2) SUBDIVISION	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES		
(3) ROOM OR SPACE	(4) FURNITURE-EQUIPMENT				MALE	FEMALE	
(5) REMARKS							
Class of Post Office		First					
Postal Receipts, 1953		\$467,738					
Population of City, 1950		45,429					
Type of Post Office,		Multiple					
POST OFFICE							
P. O. Lobby		1		1,500			
Screen Line Service Windows							
Money Orders		2					
Postal Savings		1					
Registry - C.O.D.		1					
General Delivery		1					
Stamps		2					
Parcel Post - Stamps		2					
Civil Service		1					
Total		10					
Lock Boxes and Drawers							
No. 1		480					
No. 2		118					
No. 3		60					
No. 4		28					
No. 5		6					
Total		692					
APPROVED BY		OFFICE			DATE		

Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 3 of 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000
CITY TRENT	STATE IOWA	

CHARACTER OF PROJECT New Building	OPERATED BY
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(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES	
					MALE	FEMALE
Drops						
Type E (Letters)	5					
(Packages)						
Type C (Papers)	1					
Total	6					
Vaults						
Assistant Postmaster		1		150		
Money Order - Registry Section		1		100		
Total Vaults				250		
Private Offices						
Postmaster - Private Toilet		1		300		
Postmaster's Reception Room		1		250		
Assistant Postmaster		1		300		
Superintendent of Mails		1		250		
Superintendent of Postal Finance		1		250		
Post Office Inspector		1		600		
P.O. Inspector - Reception Room		1		250		
Total - Private Offices		7		2,200		
Money Order - Registry Section						
Clerk in Charge		1		120		
Money Order Clerks		1		720		
C.O.D. Storage		1		225		
Total Money Order Registry Section		3		1,065		

APPROVED BY	OFFICE	DATE
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Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1955

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 5 OF 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000
STREET	CITY TRENT	STATE IOWA

CHARACTER OF PROJECT New Building	OPERATED BY
---	-------------

(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES	
					MALE	FEMALE
U.S. District Court (Including Attorney-Marshall)						
Administrative Office of the U. S. Courts						
Court Room		1		2,250		
Jurors' Coat Closet or Alcove Attorneys' Coat Closet						
Judges' Office		1		600	1	
Book Shelving, Built in Toilet Robing Closet						
Secretary's Office		1		350		1
Coat Closet Supply Closet						
Attorney's Room - Consultation		1		275		
Library and Law Clerk		1		600	1	
Book Shelving, Built-in						
Petit Jury Room		1		350		
Coat Closet or Alcove Mens' Toilet Womens' Toilet						
Witness Room		1		200		
Grand Jury Room		1		600		
Mens' Coat Closet or Alcove Mens' Toilet						

APPROVED BY	OFFICE	DATE
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Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1959

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

PROJECT TITLE

SHEET 6 OF 10 SHEETS

Post Office and Court House

PROJECT NO.

00-000

STREET

CITY

TRENT

STATE

IOWA

CHARACTER OF PROJECT

New Building

OPERATED BY

(1) DIVISION OR AGENCY
(3) ROOM OR SPACE
(5) REMARKS

(2) SUBDIVISION
(4) FURNITURE-EQUIPMENT

NUMBER
OF
ROOMS

AREA OF
EACH
ROOM

TOTAL
AREA

EMPLOYEES

MALE

FEMALE

Administrative Office of the U. S. Courts
Grand Jury Room (Continued)

Womens' Coat Closet or Alcove

Womens' Toilet

Clerk of Court, Private Officer
Toilet

General Office with Public Space
Counter

Supply Room

Vault

Exhibit Room

Probation and Parole Officer

Reception or Waiting Room
Supply Closet

Court Reporter

Subtotal - Admin. Office of U.S. Courts

Justice - (Attorney and Marshal Only)

Attorney's Office

Toilet and Coat Closet

Marshal - Private Office

Toilet

APPROVED BY

OFFICE

DATE

Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 7 OF 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000
STREET	CITY TRENT	STATE IOWA

CHARACTER OF PROJECT

New Building

OPERATED BY

(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES	
					MALE	FEMALE
U. S. District Court						
Justice (Attorney-Marshall Only) (Continued)						
General Office with Public Space Counter		1		500	3	3
Detention Cells for Men - With Toilet		1		100		
Detention Cells for Women - With Toilet		1		100		
Subtotal - Justice - Attorney-Marshall		8		1,700	9	6
Total - U. S. District Court		24		8,575	14	8
Agriculture						
Agriculture Stabilization Conservation Commodity Stabilization Service						
County Manager		1		150	1	
Secretary and Reception Counter		1		250		1
Work Area, Files, etc.		1		700	2	3
Corn Testing Laboratory		1		200	1	
Storage		1		100		
Subtotal - A S C		5		1,400	4	4
Extension Service						
County Agent		1		250	1	
Home Demonstration Agent and 4 H Club Agent		2	200	400	1	1
General Office		1		600	1	2
APPROVED BY						
OFFICE						

APPROVED BY

OFFICE

DATE

Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 8 OF 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000	
STREET	CITY TRENT	STATE IOWA	
CHARACTER OF PROJECT New Building		OPERATED BY	
(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM
		TOTAL AREA	EMPLOYEES MALE FEMALE
Agriculture			
Extension Service (Continued)			
Storage Room		1	150
Subtotal - Extention Service		5	1,400 3 3
Soil Conservation Service			
Area Conservationist		1	175 1
Secretary, Files, Work Rm., Receptionist		1	200 1
Work Unit Conservationist		1	125 1
Work Unit Technicians		1	225 2
Technicians, Engineers, Drafting		1	600 5
Storage		1	150
Subtotal - Soil Conservation Service		6	1,475 9 1
Subtotal - Agriculture		16	4,275 16 8
Civil Service		1	450
Defense			
Navy - Recruiting			
Office and Reception		1	250 2
Exam. Room and Storage		1	250
Subtotal - Navy Recruiting		2	500 2
Navy - Marine Recruiting		1	200 1
Subtotal - Defense		3	700 3

APPROVED BY

OFFICE

DATE

Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

SPACE DIRECTIVE (GENERAL)

SHEET 9 OF 10 SHEETS

PROJECT TITLE Post Office and Court House		PROJECT NO. 00-000
STREET	CITY TRENT	STATE IOWA

CHARACTER OF PROJECT New Building	OPERATED BY
---	-------------

(1) DIVISION OR AGENCY (3) ROOM OR SPACE (5) REMARKS	(2) SUBDIVISION (4) FURNITURE-EQUIPMENT	NUMBER OF ROOMS	AREA OF EACH ROOM	TOTAL AREA	EMPLOYEES	
					MALE	FEMALE
General Services						
PBS - Building Management						
Office		1		200	1	
Male Locker Room		1		200	7	
Female Locker Room		1		100		3
Shop		1		750	2	
Storeroom		1		390		
Gear Room		1		100		
Janitor Closets		4	15	60		
Trash Room		1		200		
Subtotal - PBS - Building Management		11		2,000	10	3
Reserve				1,800		
Subtotal - General Services				3,800	10	3
Health, Education & Welfare						
Social Security - OASI						
Office		1		320	1	
To be used 2 or 3 days a week. Other Agency could use room also.						
Interior						
Geological Survey						
Offices		6	250	1,500	4	1
APPROVED BY		OFFICE				

APPROVED BY	OFFICE	DATE
-------------	--------	------

Supplementary data sheets shall be numbered in sequence with Space Directive sheets

GSA FORM 261
AUGUST 1958

NO. _____

SPACE DIRECTIVE CHANGE

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE	
-------	--

CHARACTER OF PROJECT

OPERATED BY	
-------------	--

(1) DIVISION OR AGENCY
(2) SUBDIVISION
(3) ROOM OR SPACE
(4) REMARKS

SPACE ALLOCATED (Sq. ft.)

BY DIRECTIVE OF

ADDITIONS (+)
DEDUCTIONS (-)

TOTAL
(By this change)

PREPARED BY

DATE	
------	--

PBS-143
AUGUST 1959

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

PROJECT DIRECTIVE
ESTIMATES (BUDGET)
SHEET 1 OF SHEETS

EST

PROJECT TITLE

PROJECT NO

STREET

CITY

STATE

CHARACTER OF PROJECT

CONTRACT ARCHITECT

STREET

CITY

STATE

DESCRIPTIVE DATA AND FINANCIAL STATEMENT

(BASED ON TENTATIVE SKETCHES DATED _____ 19__)

DESCRIPTIVE DATA

AREA OF SITE _____ SQ. FT. TOTAL NET FLOOR AREA _____ SQ. FT.
GROUND AREA OF BUILDING* _____ SQ. FT. TOTAL GROSS FLOOR AREA* _____ SQ. FT.

*For extension and remodeling, these items apply to the extension only.

FINANCIAL STATEMENT (ESTIMATE)

GENERAL CONTRACT..... \$ _____
RESERVATIONS..... _____
CONTINGENCIES..... _____
REQUIRED FOR CONSTRUCTION. \$ _____
AVAILABLE FOR CONSTRUCTION _____
SURPLUS OR DEFICIT..... _____
COST PER SQ. FT. \$ _____

ALTERNATES:

OPTIONS:

NOTES:

APPROVED BY DIRECTIVE BOARD

AS AE BM DS ME S SE EST CHAIRMAN

2 COPIES TO EACH SECTION

19

GSA FORM 123L
SEP 62

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

PROJECT DIRECTIVE
(FOR OFFICE USE) BUDGET
SHEET 1 OF SHEETS

EST

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

AUTHORIZATION

DESCRIPTIVE DATA

PROJECT AS AUTHORIZED

TENTATIVE SKETCHES

AREA OF SITE

DATED

19

GROUND AREA OF BUILDING

SQ. FT.

SQ. FT.

TOTAL NET FLOOR AREA

SQ. FT.

SQ. FT.

TOTAL GROSS FLOOR AREA

SQ. FT.

SQ. FT.

BASEMENT AND

STORIES

STORIES

LIMIT OF COST

PROSPECTUS

APPROPRIATED

SITE AND EXPENSES

\$

\$

IMPROVEMENTS

\$

\$

TOTAL

\$

\$

SITE AND EXPENSES

TOTAL \$

ESTIMATED

SITE

\$

SURVEY, BIDS AND OTHER*

\$

GENERAL EXPENSES:

TOTAL

\$

\$

D&S

\$

S&I

\$

STAFF

\$

BALANCE OR DEFICIT \$

IMPROVEMENTS

TOTAL \$

ESTIMATED

CONSTRUCTION

\$

CONTINGENCIES (Available for Construction)

\$

RESERVATIONS*

\$

\$

BALANCE OR DEFICIT \$

COST PER SQ. FT.

\$

\$

* See sheet 3 (GSA Form 123d) for detail.

ALTERNATES:

OPTIONS:

NOTES:

APPROVED BY DIRECTIVE BOARD

AS

AE

BM

DS

ME

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SE

EST

CHAIRMAN

2 COPIES TO EACH SECTION

19

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

PROJECT DIRECTIVE
ESTIMATE (GENERAL CONTRACT)
SHEET 2 OF SHEETS

EST

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

ESTIMATED ON: ☐ TENTATIVE; ☐ INTERM.; ☐ COMPLETED; ☐ FINAL; DRAWINGS DATED 19

NAME OR NUMBER OF THIS BUILDING:

PHASE NO.

ESTIMATE FOR: ☐ R&I; ☐ REMODELING; ☐ EXTENSION; ☐ NEW BUILDING; ☐ ENTIRE PROJECT

ITEMS	A-E EST.	PBS EST.	DIFFERENCE
1. DEMOLITION			
2. APPROACH WORK			
3. BUILDING EARTHWORK, SHEET PILING			
4. CAISSONS, PILES			
5. SUBDRAINS, WATERPROOFING, DAMPPROOFING			
6. CONCRETE AND CEMENT WORK			
7. MASONRY			
8. EXTERIOR FACE STONEWORK			
9. LATH, PLASTER, STUCCO			
10. ACOUSTICAL TREATMENT			
11. INTERIOR MARBLE, STONE, TILE, TERRAZZO			
12. STRUCTURAL STEEL			
13. METAL DECK INCLUDING CELLULAR FLOORS			
14. MISCELLANEOUS IRON			
15. ALUMINUM, BRONZE, STAINLESS STEEL, ETC.			
16. ROOFING, SHEET METAL WORK			
17. METAL WINDOWS			
18. METAL DOOR, TRIM			
19. MOVABLE PARTITION			
20. CARPENTRY, MILLWORK			
21. THERMAL INSULATION			
22. HARDWARE			
23. PAINTING			
24. GLASS AND GLAZING			
25. RESILIENT FLOOR COVERING			
26. VENETIAN BLINDS			
27.			
28.			
29.			
30. SUBTOTAL ARCH. AND STRUC.			
31. MECH. SUBTOTAL COST (Line 22, Sheet 2A)			
32. ELEC. SUBTOTAL COST (Line 36, Sheet 2A)			
33. SUBTOTAL OF CONSTR. COST			
34. GENERAL CONTRACTOR'S O.H. & P.			
35. TOTAL COST			
36. GROSS FLOOR AREA SQ. FT.			
37. ARCH. AND STRUC. UNIT COST			
38. MECHANICAL UNIT COST			
39. ELECTRICAL UNIT COST			
40. TOTAL UNIT COST PER SQ. FT.			

NAME OF ARCHITECT-ENGINEER

CHECKED BY

DATE

NAME OF PBS ESTIMATOR

CHECKED BY

PCEM

PCEE

PCEC

DATE

SPECIAL COMMENTS

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

PROJECT DIRECTIVE
ESTIMATE (GENERAL CONTRACT)
SHEET 2A OF SHEETS

EST

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

ESTIMATED ON: ☐ TENTATIVE; ☐ INTERM.; ☐ COMPLETED; ☐ FINAL; DRAWINGS DATED 19

NAME OR NUMBER OF THIS BUILDING: PHASE NO.

ESTIMATE FOR: ☐ R&I; ☐ REMODELING; ☐ EXTENSION; ☐ NEW BUILDING; ☐ ENTIRE PROJECT

MECHANICAL ITEMS INCLUDING SUBCONTRACTOR'S O.H. & P.	A-E EST.	PBS EST.	DIFFERENCE
1. PLUMBING			
2. OUTSIDE SERVICES FOR PLUMBING			
3. HEATING, VENTILATING AND AIR CONDITIONING			
4. OUTSIDE SERVICES FOR H.V. AND A.C.			
5. ELEVATORS, ESCALATORS AND DUMBWAITERS			
6. LABORATORY OR HEALTH UNIT EQUIPMENT			
7. CAFE EQUIPMENT, KITCHEN AND SERVING			
8. POWER-OPERATED DOORS			
9. ADJUSTABLE LOADING RAMPS			
10. SCALES			
11. PNEUMATIC TUBE SYSTEM			
12. CONVEYORS			
13. WINDOW WASHING EQUIPMENT			
14.			
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22. MECHANICAL TOTAL COST			

NAME OF A-E ESTIMATOR	CHECKED BY	DATE
NAME OF PBS ESTIMATOR	CHECKED BY	DATE

ELECTRICAL ITEMS INCLUDING SUBCONTRACTOR'S O.H. & P.	A-E EST.	PBS EST.	DIFFERENCE
23. ELECTRICAL WORK			
24. LIGHTING FIXTURES			
25. UNDERFLOOR DUCTS			
26. ELEC. CELLULAR RACEWAY AND HEADER DUCT			
27. CIVIL DEFENSE ALARM SYSTEMS			
28. FIRE ALARM AND WATCHMAN'S CLOCK SYSTEMS			
29. CLOCKS AND CLOCK SYSTEM			
30. SNOW MELTING SYSTEM			
31. ELECT. GENERATORS			
32. OUTSIDE ELEC. UTILITIES			
33.			
34.			
35.			
36. ELECTRICAL TOTAL COST			

NAME OF A-E ESTIMATOR	CHECKED BY	DATE
NAME OF PBS ESTIMATOR	CHECKED BY	DATE

SPECIAL COMMENTS

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
SITE DEVELOPMENT
SHEET 4 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001

STREET Green Avenue & White Street CITY Clawson, STATE Iowa

(Attach survey and photographs of site, and mechanical and chemical analysis of soil)

CHARACTER OF SITE

AREA OF SITE: 3,496 Acres

DESCRIPTION OF TOPOGRAPHY: Level

EASEMENTS AND RIGHTS OF WAY:	☐ YES	☒ NO		
ENCROACHMENTS:	☐ YES	☒ NO		
BUILDING SETBACKS (See survey):	☐ YES	☒ NO		
STREET WIDENING BY CITY (Proposed):	☒ YES	☐ NO		
ZONING:	☐ RESIDENTIAL	☒ COMMERCIAL	☐ INDUSTRIAL	☐ RURAL
EXISTING CONSTRUCTION:	☐ TO REMAIN	☒ TO BE REMOVED	☐ NONE	
DEMOLITION IN SEPARATE CONTRACT:	☐ YES	☒ NO		

SITE WORK

DRAINAGE:	☐ SURFACE	☒ CATCH BASIN	
PAVED AREAS			
ROADS (Within property limits):	☐ CONCRETE	☐ BITUMINOUS	☒ NONE
	☐ OTHER:		
CURBS:	☐ CONCRETE	☐ NONE	☐ OTHER:
DRIVEWAYS:	☐ CONCRETE	☒ BITUMINOUS	☐ NONE
	☐ OTHER:		
CURBS:	☒ CONCRETE	☐ NONE	☐ OTHER:
PARKING AND MANEUVERING AREAS:	☐ CONCRETE	☒ BITUMINOUS	☐ NONE
	☐ OTHER:		
BUMPER CURBS:	☒ CONCRETE	☐ NONE	☐ OTHER:
RAMPS (Vehicular traffic):	☒ CONCRETE	☐ NONE	☐ OTHER:
	☐ OTHER:		
BUMPER CURBS:	☒ CONCRETE	☐ NONE	☐ OTHER:
	☐ OTHER:		
WALKS			
SIDEWALKS (Outside property limits):	☒ CONCRETE	☐ NONE	☐ OTHER:
STREET CURBS:	☒ CONCRETE	☐ NONE	☐ OTHER:
LOT CURBS:	☐ CONCRETE	☒ NONE	☐ OTHER:
WALKS (Within property limits):	☒ CONCRETE	☐ OTHER:	
STEPS IN APPROACHES:	☐ CONCRETE	☐ OTHER:	
FLAGPOLE (Ground):	☒ STANDARD, S.D. 6-3-1	☐ SPECIAL DESIGN	☒ NONE
MATERIAL:	☒ ALUMINUM	☐ STEEL	☐ OTHER:
FENCES - MATERIAL:	<u>None</u>	HEIGHT: <u>50'-0"</u>	
RETAINING WALLS - MATERIAL:	<u>Concrete</u>	HEIGHT:	
GRASS AND PLANTING			
GRASS AREAS:	☒ SEEDING	☐ SODDING	☐ NONE
PLANTING (Excluding grass):	☐ IN CONTRACT	☒ SEPARATE CONTRACT	☐ NONE
GROUND COVER OTHER THAN GRASS OR PLANTING:	☐ IN CONTRACT	☐ SEP. CONTRACT	☒ NONE

ALTERNATES (Site development only): None

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
EXTERIOR MATERIALS
SHEET 5 OF 17 SHEETS

A

PROJECT TITLE **U.S. Post Office, Court House & FOB**

PROJECT NO. **00001**

STREET **Green Avenue & White Street**

CITY **Clawson,**

STATE **Iowa**

WALLS (See Project Directive, Structural, for Construction)

☐ MASONRY

FACING: ☐ BRICK ☐ LIMESTONE ☐ GRANITE ☐ MARBLE
☐ OTHER:

TRIM: ☐ LIMESTONE ☐ GRANITE ☐ MARBLE ☐ OTHER:

☒ METAL CURTAIN WALL

TRIM: ☒ ALUMINUM ☐ STAINLESS STEEL ☐ OTHER:

SPANDREL PANELS: ☐ PORC. ENAM. METAL ☒ GLASS ☐ OTHER:

☒ CAST STONE PANELS

☐ OTHER WALL MATERIALS:

ROOF (See Project Directive, Structural, for Construction)

TYPE: ☒ LEVEL ☐ PITCHED ☐ SLOPING OR SPECIAL SHAPE

ROOFING MATERIAL: ☒ BUILT UP ☐ OTHER:

INSULATION: ☒ RIGID, SEE GUIDE SPECIFICATION ☐ LIGHTWEIGHT INSUL. FILL

☐ OTHER:

PENTHOUSE

WALL FACING: **cast stone panels**

COOLING TOWER ENCLOSURE: **cast stone screen**

EXTERIOR OPENINGS

TYPICAL WINDOWS - TYPE: **Vertical pivoted**

MATERIAL: ☒ ALUMINUM ☐ STAINLESS STEEL ☐ OTHER:

GLAZING: ☒ POLISHED PLATE ☐ CLEAR SHEET ☐ HEAT ABSORBING ☐ INSULATING

☐ OTHER:

WINDOWS OTHER THAN TYPICAL (Type, Material, Glazing & Location):

Basement and weight room windows: Aluminum fixed, clear sheet glass

ENTRANCE DOORS AND TRIM: ☒ ALUM. & GLASS ☐ STAINLESS STEEL & GLASS

☐ OTHER:

FIRE RATED WINDOWS AND DOORS: CLASS: **None** LOCATION:

STORM SASH: ☐ YES ☒ NONE INSECT SCREENS: ☐ YES ☒ NONE

WINDOW WASHING SCAFFOLD: (See Project Directive, Mechanical): ☐ YES ☒ NONE

MISCELLANEOUS ITEMS

CORNER STONE: ☒ STD. DETAIL ☐ SPECIAL DESIGN MATERIAL: **Granite**

TITLE LETTERS: ☒ ALUMINUM ☐ STAINLESS STEEL ☐ OTHER:

EXTERIOR LOADING OR MAILING PLATFORM: ☒ YES ☐ NONE

FLOOR: ☒ HEAVY DUTY CONCRETE WALL SURFACE: ☒ BRICK ☐ CONCRETE

WEATHER BUREAU EQUIPMENT: ☐ YES ☒ NONE

ORNAMENTAL GRILLES - MATERIAL & LOCATION:

ENTRANCE STEPS: ☒ YES ☐ NONE MATERIAL: **Concrete (rear entrance)**

RAILS: ☒ YES ☐ NONE MATERIAL: **Aluminum**

Other Items: Concrete pylon for Building Title letters.

ALTERNATES (Exterior Materials Only): **None**

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
INTERIOR MATERIALS
SHEET 6 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB

PROJECT NO. 00001

STREET Green Avenue & White Street

CITY Clawson,

STATE Iowa

PARTITION CONSTRUCTION

CORE AREAS, PERMANENT SPACES, FIRE RATED SPACES:

☒ MASONRY ☐ CONCRETE

☐ STEEL STUD ☐ OTHER:

GENERAL OFFICE SPACE:

CORRIDOR PARTITIONS: ☒ MOVABLE METAL ☐ DEMOUNTABLE PANEL TYPE

☐ OTHER:

ALTERNATE: Demountable Panel type IN LIEU OF: Movable metal

INTER-OFFICE PARTITIONS: ☒ MOVABLE METAL ☐ DEMOUNTABLE PANEL TYPE

☐ OTHER:

ALTERNATE: Demountable Panel type IN LIEU OF: Movable metal

OTHER PARTITIONS:

INTERIOR DOORS (See Design Data 28-7-3)

TYPICAL: ☒ WOOD, SOLID CORE ☐ HOLLOW METAL ☒ TYPE "A," S.D. 6-15-1

☐ OTHER TYPE AND MATERIAL:

STAIR: ☒ HOLLOW METAL ☐ WOOD COMPOSITE ☒ TYPE "C," S.D. 6-15-1

☐ OTHER TYPE AND MATERIAL:

OTHER FIRE RATED DOORS: ☒ HOLLOW METAL ☐ WOOD COMPOSITE ☒ TYPE "A," S.D. 6-15-1

☐ OTHER TYPE AND MATERIAL:

P.O. WORKROOM: ☒ HOLLOW METAL, TYPE "A," S.D. 6-15-1

☐ NONE

(For door to mailing vestibule and box lobby see standard details.)

BREAKOUT (Post Office): ☒ HOLLOW METAL, TYPE "D," S.D. 6-15-1

☐ NONE

SPECIAL DOORS (Type, material and location): Aluminum and glass doors and sidelights in P.O. lobbies and entrance lobbies

ELEVATOR CABS AND ENTRANCES

PASSENGER CABS: ☒ S.D. 10-5-1 ☐ S.D. 10-5-2 ☐ S.D. 10-5-3 ☐ SPECIAL

HOISTWAY ENTRANCES:

MAIN FLOOR: ☐ STEEL, BAKED ENAMEL

☒ OTHER MATERIAL: Stainless steel

COURTROOM FLOOR: ☐ STEEL, BAKED ENAMEL

☒ OTHER MATERIAL: Stainless steel

OTHER FLOORS: ☒ STEEL, BAKED ENAMEL

☐ OTHER MATERIAL:

SILLS: ☐ CAST IRON ☐ CAST BRONZE ☐ EXTRUDED BRONZE ☐ CAST WHITE BRONZE

☒ EXTRUDED WHITE BRONZE

MISCELLANEOUS ITEMS

BULLETIN BOARDS: ☒ ALUM., S.D. 6-17-1

☐ OTHER MATERIAL:

DIRECTORY BOARDS: ☒ ALUM., S.D. 6-17-1

☐ OTHER MATERIAL:

EXHIBIT CASE (See Reservation Sheet):

☒ YES

☐ NONE

MAIL CHUTE (Bldgs. 4 stories or more): None

☐ ALUMINUM

☐ STAINLESS STEEL ☐ BRONZE

PUBLIC TELEPHONE: ☒ YES

☐ NONE

VENETIAN BLINDS: ☒ in contract

☐ not in contract

☐ NONE

MATERIAL: ☐ ALUM., BAKED ENAMEL

☒ STEEL, BAKED ENAMEL

TYPE: ☒ HORIZONTAL ☐ VERTICAL

WINDOW GUARDS: ☒ DETENTION CELL, S.D. 6-11-15

☐ NONE

☐ OTHERS:

ALTERNATES (Interior Materials only): For General Office space partitions, see above

GSA FORM JUL 63 123G

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
INTERIOR FINISHES
SHEET 8 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001

STREET Green Avenue & White Street CITY Clawson, STATE Iowa

ITEM	FINISH: 4	FINISH: 5	FINISH: 6
FLOOR	Ceramic Tile	Concrete	Terrazzo
BORDER			
BASE	Ceramic Tile		Terrazzo
WAINSCOT			
HEIGHT			
WALLS	Ceramic Tile *	C.M.U.	Plaster
COLUMNS (Surface)			
BASE			
WAINSCOT			
HEIGHT			
CEILING	Plaster **	Plaster	Acous. Tile *
DOOR TRIM	Stl., S.D. 6-15-2	Stl. S.D. 6-15-2	Alum.**
WINDOW STOOLS			
MOVABLE PARTITIONS			
WATER CLOSET ENCLOSURES	Steel		
SHOWER ENCLOSURES	Steel (S.D. 6-13-8)		
URINAL PARTITIONS			
STAIRS (Construction)			
TREADS			
RISERS			
PLATFORMS			
STRINGERS			
WALL			
WELL			
FASCIA			
NEWELS			
SOFFITS			
HANDRAILS			
WALL			
WELL			
BALUSTERS			
NOTES	*C.T. 8'-0" high in Men's Swing Rm. Toilet, Plaster above. **Keene's cement clg. where shower is required		*Mech. suspension system. See Design Data 28-30-1B. Schedule "B". Walls surrounding space to extend to slab. **Alum. hollow metal door, Lock Box Lobby.
			Lock Box & Service Lobbies
	Public Toilets	Shop, Trash Rooms	
	Jury Room Toilets,	Labor Fore., Bmt.	
SPACES	Custodial Toilets	Lobby & Corr., Tel.	
	Men's P.O. Swing Room Toilet	Equip., Wire Closets	
		Weigh Room, P.O.	
		Equip. Supply,	
		Records, Stamped Envelopes.	

GSA FORM JUL 63 123H

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
INTERIOR FINISHES
SHEET 9 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001

STREET Green Avenue & White Street CITY Clawson, STATE Iowa

ITEM	FINISH: 7	FINISH: 8	FINISH: 9
FLOOR	Terrazzo	Terrazzo	Asph. Ind. flooring
BORDER			Tile
BASE	Terrazzo	Marble	
WAINSCOT			Brick *
HEIGHT			4'-5 3/8"
WALLS	Arch. Cast Stone	Marble	C.M.U. *
COLUMNS (Surface)			Conc.
BASE			
WAINSCOT			Stl. S.D. 6-11-10
HEIGHT			
CEILING	Acous. Tile *	Acous. Tile *	Plaster
DOOR TRIM	Alum.	Stl. S.D. 6-15-2**	Stl., S.D. 6-15-2
WINDOW STOOLS			
MOVABLE PARTITIONS			
WATER CLOSET ENCLOSURES			
SHOWER ENCLOSURES			
URINAL PARTITIONS			
STAIRS (Construction)			
TREADS			
RISERS			
PLATFORMS			
STRINGERS			
WALL			
WELL			
FASCIA			
NEWELS			
SOFFITS			
HANDRAILS			
WALL			
WELL			
BALUSTERS			
NOTES	*Mech. suspension system. See Design Data 28-30-1b Sched.	*Mech. suspension system. See Design Data 28-30-1B	*Plaster walls & vinyl base @ screen line.
	"B". Walls surrounding space to extend to slab.	Sched. "B". Walls surrounding space to extend to slab.	
		**Elevator doors & frames Alum.	
SPACES	Elevator & Rear Lobbies - 1st. Floor	Elevator & Public Lobbies - 3rd. Floor	P.O. Workroom

GSA FORM JUL 63 123H

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
INTERIOR FINISHES
SHEET 10 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001
STREET Green Avenue & White Street CITY Clawson, STATE Iowa

ITEM	FINISH: 10	FINISH: 11	FINISH: 12
FLOOR	Vinyl. Asb. Tile	Concrete-heavy	Vinyl Asb. Tile
BORDER		duty	
BASE	Vinyl Plastic		Vinyl Plastic
WAINSCOT		brick	
HEIGHT		4'-5 3/8"	
WALLS	Exposed	C.M.U.	Plaster
COLUMNS (Surface)			
BASE			
WAINSCOT			
HEIGHT			
CEILING	Plaster	Plaster	Acous. Tile *
DOOR TRIM	Stl. S.D. 6-15-2	Stl., S.D. 6-9-26	Stl., S.D. 6-15-2
WINDOW STOOLS			
MOVABLE PARTITIONS			
WATER CLOSET ENCLOSURES			
SHOWER ENCLOSURES			
URINAL PARTITIONS			
STAIRS (Construction)			
TREADS			
RISERS			
PLATFORMS			
STRINGERS			
WALL			
WELL			
FASCIA			
NEWELS			
SOFFITS			
HANDRAILS			
WALL			
WELL			
BALUSTERS			
NOTES			*Applied with adhesives to gypsum board or plaster
			See D.D. 28-30-1B, Schedule "A"
SPACES	Men's Swing & Locker Room, Women's swing & locker room, basement locker	Mailing vestibules and Employee Entrance	Permanent office spaces, Hearing and Petit Jury Rooms Grand Jury Room Vending Stand

GSA FORM JUL 63 123H

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.

PROJECT DIRECTIVE
INTERIOR FINISHES
SHEET 11 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House, & FOB

PROJECT NO. 00001

STREET Green Avenue & White Street

CITY Clawson,

STATE Iowa

ITEM	FINISH: 13	FINISH: 14	FINISH: 15
FLOOR	Vinyl Asb. Tile	Conc.-Carpet N.I.C.	Conc.-Carpet N.I.C.
BORDER			
BASE	Vinyl Plastic	Wood	Wood
WAINSCOT		Wood	
HEIGHT		7'-2"	
WALLS	Plaster	See Notes	Plaster, Wood*
COLUMNS (Surface)	Plaster		
BASE	Vinyl Plastic		
WAINSCOT			
HEIGHT			
CEILING	Acous. Tile*	See Notes	Plaster
DOOR TRIM	Stl., S.D. 6-15-2	Wood	Wood
WINDOW STOOLS			Marble
MOVABLE PARTITIONS	See Sheet No. 6		
WATER CLOSET ENCLOSURES			
SHOWER ENCLOSURES			
URINAL PARTITIONS			
STAIRS (Construction)			
TREADS			
RISERS			
PLATFORMS			
STRINGERS			
WALL			
WELL			
FASCIA			
NEWELS			
SOFFITS			
HANDRAILS			
WALL			
WELL			
BALUSTERS			
NOTES	*Removable clg. See D.D. 28-30-18 Schedule "B" & D.D. 28-1-40	Material of walls above wainscot, & ceiling to be deter- mined by acoustical analysis	*wood shelving in Judge's and Law Clerk's offices
SPACES	General Office including corri- dors and second floor Elevator Lobby	Courtroom	Judge's Suite Office, Reception, Secretary, Crier, private passage, Law Clerk.

GSA FORM 123H
JUL 63

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON, D. C.

PROJECT DIRECTIVE
INTERIOR FINISHES
SHEET 13 OF 17 SHEETS

A

PROJECT TITLE U.S. Post Office, Court House & FOB

PROJECT NO. 00001

STREET **Green Avenue & White Street** CITY **Clawson.**

STATE Iowa

ITEM	FINISH: 19	FINISH: 20	FINISH: 21
FLOOR	Vinyl Asb. Tile	Concrete	Concrete
BORDER			
BASE	Vinyl Plastic		
WAINSCOT			
HEIGHT			
WALLS	Plaster	Bldg. Brick -	Exposed
COLUMNS (Surface)		Painted	
BASE			
WAINSCOT			
HEIGHT			
CEILING	Plaster	Concrete	Exposed
DOOR TRIM	See Std. Det.	See Std. Det.	Steel, S.D. 6-15-2
WINDOW STOOLS			Alum.
MOVABLE PARTITIONS			
WATER CLOSET ENCLOSURES			
SHOWER ENCLOSURES			
URINAL PARTITIONS			
STAIRS (Construction)			
TREADS			
RISERS			
PLATFORMS			
STRINGERS			
WALL			
WELL			
FASCIA			
NEWELS			
SOFFITS			
HANDRAILS			
WALL			
WELL			
BALUSTERS			
NOTES	See S.D. 6-15-32	See Std. Det.	
		6-15-23	
SPACES	Vaults -	P.O. Vault	Boiler & A.C. Rms.,
	Clerk of Court,		Basement Storage
	U.S. Marshal		Rm., Transformer &
	U.S. Atty.		Elec. Serv. Rms.,
			Mech. & Machine
			Rms.

GSA FORM 123H
JUL 63

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

PROJECT DIRECTIVE

STRUCTURAL

SHEET 14 OF 17 SHEETS

S

PROJECT TITLE U.S. Post Office, Court House & FOB

PROJECT NO. 00001

STREET Green Avenue & White Street CITY Clawson

STATE Iowa

☐ STORIES AND ☐ NO BASEMENT ☒ PART BASEMENT ☐ FULL BASEMENT

FUTURE EXTENSIONS: LATERAL ☐ YES ☒ NO VERTICAL ☐ STORIES

FLOOR	LIVE LOAD	OCCUPANCY
Roof	30 psf	
	150 psf	Mechanical Equip. Space
Third	80 psf	Offices and Court Room
Second	80 psf	Offices
First	100 psf	Lobby and Work Room
	250 psf	P. O. Vaults
	125 psf	Mailing Platform
General	100 psf	All stairs, cor. & lobbies
	60 psf	Toilets

WIND FORCE

Basic 20 LBS/SQ. FT.

SEISMIC FORCE

-- COEFFICIENT

CLASS OF STRUCTURAL CONCRETE

ROOF 3000 psi

FLOORS 3000 psi

COLS. 3000 psi

FOUNDATION 2500 psi

CONSTRUCTION

(CHECK DESIGNATION)

GENERAL ☐ WALL BEARING ☒ SKELETON ☐ SKELETON WITH SELF-SUPPORTING WALLS

Low - Concrete ribbed slabs, metal fillers, concrete beams and cols.

ROOF High - Precast concrete on steel beams, steel columns

CEILING (UNDER ROOF) Suspended plaster

FLOORS Concrete ribbed slabs, metal filler (10" x 3"), concrete beams and cols.

BASEMENT FLOOR 6 inch reinforced concrete slab on 6 inch porous fill

BAS'T WATERPROOFING ☐ YES ☒ NO HYDROSTATIC PRESSURE FEET

Dampproof building walls against earth with mopped on dampproofing & Protection TYPE

TILE DRAIN ☒ YES ☐ NO DISCHARGE: ☒ GRAVITY ☐ SUMP ☒ TO SEWER ☐ DRY WELL

BAS'T BEARING WALLS Concrete

EXTERIOR WALLS 12 inch masonry bonded

FOUNDATION ☒ SPREAD FOOTINGS ☐ PILES ☐ CAISSON ☐ NATT 5000 psf UNIT LOAD

INTERIOR STAIRS Concrete

NOTES: No floor fill generally.

Depress slabs 2 inches for special floor finishes such as terrazzo and ceramic tile, 1/2 inch for asphalt plank in workroom and 1-1/2 inches for special finish on mailing platform slab.

**GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D. C.**

**PROJECT DIRECTIVE
MECHANICAL AND ELECTRICAL
SHEET 15 OF 17, SHEETS**

ME

PROJECT TITLE U.S. Post Office, Court House & FOB **PROJECT NO.** 00001

STREET Greene Avenue & White St. **CITY** Clawson **STATE** Iowa

PLUMBING

WATER SUPPLY - SOURCE AND PRESSURE City, 90 p.s.i.

DISPOSAL OF SANITARY SEWAGE To city system, Ejector for Basement Fixtures

DISPOSAL OF STORM WATER To city system

LAWN SPRINKLER SYSTEM None

FIRE SPRINKLER SYSTEMS (See Fire Safety Sheet)

WATER HEATING METHOD Automatic self-contained storage type

FUEL FOR WATER HEATING Gas

DRINKING WATER SYSTEM Electric Water Coolers

CAFETERIA EQUIPMENT

ELECTRIC None

GAS None

HEATING AND MISCELLANEOUS EQUIPMENT

HEATING SYSTEM Low Pressure Steam to AC Units, some local Radiation

BOILERS, NUMBER AND TYPE Steel, High Fire Box

FUEL - PRIMARY, STANDBY Gas, with Oil Stand-by

ASH DISPOSAL None

SNOW MELTING None

INCINERATOR None

DIESEL ENGINES None

AIR CONDITIONING AND VENTILATION Complete Summer - Winter

CONDITIONED AREAS Three Floors and Basement Areas

REFRIGERATING MACHINE AND DRIVE Single centrifugal or Two reciprocating - Elec. Motor Dr.

AIR DISTRIBUTION SYSTEMS, TYPE Individual Multiple Zone Units on each Floor

MECHANICALLY VENTILATED AREAS Combined in Airconditioning System with Local Exhaust

ELECTRICAL

CLOCK SYSTEM, TYPE Central Clock System with Master Clock

FIRE ALARM SYSTEM, TYPE Manual generally, with Automatic in Hazardous Areas

WATCHMAN'S REPORT SYSTEM, TYPE None

PUBLIC ADDRESS SYSTEM, TYPE None

RADIO AND TELEVISION SYSTEM None

CIVIL DEFENSE ALARM SYSTEMS None

OTHER SYSTEMS None

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D. C.

PROJECT DIRECTIVE
MECHANICAL AND ELECTRICAL
SHEET 16 OF 17 SHEETS

ME

PROJECT TITLE U.S. Post Office, Court House & FOB PROJECT NO. 00001

STREET Green Avenue & White Street city Clawson STATE Iowa

ELECTRICAL (Continued)

TELEPHONE FACILITIES Installed by Bell Telephone Company in Building Conduit

TRANSFORMERS - TYPE AND VOLTAGE

PROVIDED BY Service Company located in Building Vault

INCOMING SERVICE - CHARACTERISTICS 3 phase, 4 wire for lighting, 3 phase for power

INTERIOR DISTRIBUTION SYSTEM VOLTAGE 120/208 volt or 277/480 volt

UNDERFLOOR RACEWAYS - TYPE, LOCATION AND NUMBER OF DUCTS - Triple in 2nd & 3rd Fl. Office Area
FLOOR FILL THICKNESS 0

ILLUMINATION (Equipment type, and light source to be used)

INTERIOR:

GENERAL PURPOSE AREAS Fluorescent, Recessed or suspended, Recessed in Public Areas

CORRIDORS Suspended, Fluorescent

LOBBIES Recessed Fluorescent

COURTROOMS Fluorescent, indirect

CAFETERIAS None

SHOPS Fluorescent

OTHERS (Special Applications)

INTERNALLY ILLUMINATED SIGNS Exits, incandescent

EXTERIOR:

ENTRANCES AND APPROACHES At Building entrances, Incandescent

ROADWAYS None

PARKING AREAS None

LOADING PLATFORMS Incandescent, industrial

ELEVATORS, ESCALATORS AND MISCELLANEOUS EQUIPMENT

FREIGHT ELEVATORS - NUMBER, TYPE AND DUTY 1 Hydraulic - cap. 3500 lbs. @ 50 F.P.M.

PASSENGER ELEVATORS - NUMBER, TYPE AND DUTY 1 Electric - Geared traction
cap. 3500 lbs. @ 200 F.P.M.

ESCALATORS - NUMBER AND SIZE None

DUMBWAITERS None

CONVEYORS - TYPE None

PNEUMATIC TUBES - TYPE None

WINDOW WASHING SCAFFOLDS None

SCALES One on Mailing Platform

POWER-OPERATED DOORS None

ADJUSTABLE LOADING RAMPS None

CRANES, MONORAILS, HOISTS None

NOTES

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D. C.

PROJECT DIRECTIVE
FIRE SAFETY
SHEET 17 OF 17 SHEETS

DS

PROJECT TITLE U.S. Post Office, Court House & FOB

PROJECT NO. 00001

STREET Greene Avenue & White St. CITY Clawson,

STATE Iowa

TYPE OF CONSTRUCTION (FIREPROOF, INCOMBUSTIBLE, MASONRY WALL & WOOD, WOOD, GIVE
GENERAL FIRE RESISTANCE RATING.) FIRE RESISTIVE (2 Hour)
OCCUPANCY 186 (Incomplete)

POPULATION BY FLOORS Bsmt. - 32, 1st - 89, 2nd - 44, 3rd - 22.

COMBUSTIBLE CONTENTS (NATURE, AMOUNT, LOCATION) Mail, wood furniture, carpet, paper

LOCATION AND CONSTRUCTION OF

PROJECTION BOOTHS None

FILM STORAGE None

TRASH ROOMS Concrete Basement

TRANSFORMER VAULTS Concrete Basement

CONSTRUCTION OF

CORRIDOR DOORS Wood

STAIRWAY DOORS Hollow Metal

FIRE DOORS Hollow Metal

FIRE WALLS Brick 12 inches or Concrete 8 inches.

FIRE SHUTTERS None

PARTITIONS Gypsum board on metal studs. Corridors, toilets & other permanent
ARRANGEMENT OF partitions masonry.

EXIT LIGHTING At Stair Entrances and Building Exits.

CORRIDOR LIGHTING Portion on Emergency Circuit

FIRE ALARM Manual type in general. Automatic in local hazardous areas

LOCATION OF

SPRINKLERS Located in Trash Room and Carpenter Shop

STANDPIPE & HOSE (GIVE SIZES OF BOTH)

FIXED, AUTOMATIC EXTINGUISHERS None

PORTABLE EXTINGUISHERS (TYPE & NUMBER) 12-Soda-Acid Extinguishers in contract.

WATER SOURCE & PRESSURE IN PSI (FOR HOSE) City at 90 p.s.i.

NOTES:

APPROVED, SUBJECT TO FOLLOWING COMMENTS:

DATE 19

CHAIRMAN, OFFICE COMMITTEE ON FIRE SAFETY

GSA FORM MAY 61 123K

PBS P 3410.2B
August 7, 1964

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

REMODELING
PROJECT DIRECTIVE
BUDGET ESTIMATE

EST

REGION _____

SHEET 1 OF _____ SHEETS

PROJECT TITLE _____

PROJECT NO. _____

STREET _____

CITY _____

STATE _____

NATURE OF REMODELING _____

CONTRACT ARCHITECT-ENGINEER _____

STREET _____

CITY _____

STATE _____

(BASED ON TENTATIVE SKETCHES DATED _____ 19__)

DESCRIPTIVE DATA

GROSS FLOOR AREA _____ SQ. FT.

NET FLOOR AREA _____ SQ. FT.

NUMBER OF FLOORS _____

GROSS AREA REMODELED _____ SQ. FT.

FINANCIAL STATEMENT

GENERAL CONTRACT. \$ _____

RESERVATIONS: *(Items not in general contract)*

COMMUNICATION SYSTEM \$ _____

DIRECTIONAL SIGNS _____

ELECTRIC LAMPS _____

ELEVATOR WORK _____

EQUIPMENT, LABORATORY AND MISCELLANEOUS _____

PROJECTION AND SOUND SYSTEMS _____

TELEPHONE INSTALLATION _____

TITLE CARD HOLDERS _____

UTILITY CHANGES _____

VENETIAN BLINDS _____

DUPLICATION _____

CONTINGENCIES _____

REQUIRED FOR CONSTRUCTION _____

AVAILABLE FOR CONSTRUCTION _____

SURPLUS OR DEFICIT _____

COST PER GROSS SQ. FT. _____

ALTERNATES:

NOTES:

CONTRACT ARCHITECT-ENGINEER _____

BY _____

APPROVED BY DIRECTIVE BOARD

PLAN. DIV. _____

BM-SPACE _____

BM-R&I _____

EST _____

CHAIRMAN _____

DATE _____

GSA FORM DEC 60 1647A

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

REMODELING
PROJECT DIRECTIVE
ESTIMATE (GENERAL CONTRACT)

EST

REGION		SHEET 2 OF	SHEETS
PROJECT TITLE		PROJECT NO.	
STREET	CITY	STATE	
NATURE OF REMODELING			
CONTRACT ARCHITECT-ENGINEER			
STREET	CITY	STATE	
ESTIMATED ON TENTATIVE SKETCHES DATED		19	
ESTIMATED ON INTERMEDIATE WORKING DRAWINGS DATED		19	
ITEMS		ESTIMATED COST	
REMOVAL OF EXISTING WORK		\$	
CONCRETE AND CEMENT WORK			
MASONRY WORK, TUCKPOINTING			
LATH, PLASTER, STUCCO			
ACOUSTICAL TREATMENT			
MARBLE, TILE, TERRAZZO, STRUCTURAL GLASS			
STRUCTURAL STEEL, MISCELLANEOUS IRON			
ORNAMENTAL IRON, BRONZE, ALUMINUM, STAINLESS STEEL			
ROOFING, SHEET METAL WORK			
METAL WINDOWS			
METAL DOORS, TRIM, TOILET ENCLOSURES			
MOVABLE PARTITIONS			
CARPENTRY, MILLWORK			
THERMAL INSULATION			
HARDWARE			
PAINTING, WALL COVERING, CAULKING			
GLASS AND GLAZING			
FLOOR COVERING			
PLUMBING			
HEATING			
AIRCONDITIONING, VENTILATION			
ELECTRICAL WORK			
LIGHTING			
FIRE ALARM, WATCHMAN'S AND SPRINKLER SYSTEMS			
CLOCKS			
CAFETERIA EQUIPMENT			
VERTICAL TRANSPORTATION			
APPROACH AND SITE WORK			
FLAGPOLE			
CONTRACTOR'S OVERHEAD AND PROFIT			
TOTAL		\$	

GSA FORM DEC 60 1647B

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

REMODELING
PROJECT DIRECTIVE
MISCELLANEOUS

DS

REGION

SHEET OF SHEETS

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

DOORS:

TYPICAL

FIRE

STAIR

SPECIAL

BULLETIN BOARDS

DIRECTORY BOARD

COUNTERS

HARDWARE

TOILET ENCLOSURES

EXTERIOR MATERIALS:

WINDOWS

TITLE LETTERS

EXTERIOR ENTRANCE

STRUCTURAL

CLASS OF CONCRETE

MAJOR STRUCTURAL CHANGES

FIRE SAFETY

GENERAL FIRE RESISTIVE RATING

SPRINKLER LOCATION

NOTES:

GSA FORM
DEC 60 1647D

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE

REMODELING
PROJECT DIRECTIVE
MECHANICAL

ME

REGION

SHEET OF SHEETS

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

PLUMBING

DRINKING WATER SYSTEM

FIRE SPRINKLER SYSTEM

WATER HEATING METHOD

FIXTURES

LAWN SPRINKLER SYSTEM

HEATING, ETC.

TYPE OF SYSTEM

CHANGES TO EXISTING SYSTEM

BOILERS - NO. AND TYPE

FUEL

ASH DISPOSAL

INCINERATOR

AIRCONDITIONING AND VENTILATION

AREAS TO BE CONDITIONED

AIR DISTRIBUTION SYSTEM

REFRIGERATION MACHINE - TYPE AND DRIVE

MECHANICALLY VENTILATED AREAS

ELECTRICAL

INCOMING SERVICE

DISTRIBUTION SYSTEM

TRANSFORMERS - NO. AND TYPE

CLOCKS

FIRE ALARM SYSTEM

WATCHMAN'S REPORT SYSTEM

COMMUNICATION SYSTEMS

TELEPHONES

SIGNS

ILLUMINATION (TYPE EQUIPMENT AND LIGHT SOURCE TO BE USED)

INTERIOR:

GENERAL PURPOSE AREAS

CORRIDORS

LOBBIES

COURTROOMS

SHOPS

OTHER (SPECIAL APPLICATIONS)

EXTERIOR:

ENTRANCES AND APPROACHES

LOADING PLATFORMS

PARKING AREAS

ELEVATORS, ETC.

FREIGHT - NO., TYPE AND DUTY

PASSENGER - NO., TYPE AND DUTY

ADJUSTABLE DOCK RAMP

DOOR OPERATORS

GSA FORM 1647E
DEC 60

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

CHANGE IN APPROVED PROJECT DIRECTIVE

PROJECT TITLE

PROJECT NO.

STREET

CITY

STATE

CHARACTER OF CHANGE

CHANGE REQUESTED BY

REASON

APPROVED BY DIRECTIVE BOARD

CHAIRMAN

DATE

19

AB AEB DB MED SB ED

PCS - FILE WITH ORIGINAL DIRECTIVE

GSA FORM 124
APRIL 1958

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

MODEL SCHEDULE
(ARCHITECTURAL)
SHEET OF SHEETS

[illegible]

MODELS MARKED THUS (*) SHALL BE MADE AT SHRINKAGE SCALE

CHECKED BY:

ARCHITECT

DATE _____

19

APPROVED FOR BID RELEASE:

CHIEF OF ARCHITECTURE

DATE _____

19

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE, WASHINGTON 25, D.C.

MODEL SCHEDULE

(SCULPTURAL)

SHEET OF SHEETS

[illegible]

MODELS MARKED THUS (*) SHALL BE MADE AT SHRINKAGE SCALE

CHECKED BY:

APPROVED FOR BID RELEASE:

ARCHITECT

CHIEF OF DESIGN

DATE _____

19

DATE _____

19

GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE					CHANGE NO.		CCC		
REQUEST FOR CONTRACT CHANGE					SUPP. TO NO.				
PROJECT TITLE					PROJECT NO.				
					CONTRACT NO.				
TO: CONTRACT CHANGE COMMITTEE									
CONTRACT AMOUNT \$			COMPLETION %		☐ FUNDS ARE AMPLE		☐ FUNDS ARE NOT AMPLE (If "not" explain)		
REASON CHANGE IS MANDATORY									
1. ERROR IN DRAWINGS					2. ERROR IN SPECIFICATIONS				
☐ AS ☐ ME ☐ S ☐ SP					☐ AE ☐ ME				
3. ☐ JUSTIFIABLE REQUEST FROM CLIENT					4. DIRECTED BY:				
DESCRIPTION OF CHANGE									
(Change requested by) _____ (Date) _____									
TO: ASSISTANT COMMISSIONER FOR DESIGN AND CONSTRUCTION									
CONTRACT CHANGE COMMITTEE'S ACTION									
APPROVAL RECOMMENDED					REJECTION RECOMMENDED				
A&S	CONST.	EST.	M&E	PROJ. COORD.	A&S	CONST.	EST.	M&E	PROJ. COORD.
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐ DRAWINGS REQUIRED		☐ SPECS. REQUIRED		☐ OBTAIN PROPOSALS		☐ OBTAIN BIDS			
(Chairman, Contract Change Committee) _____ (Date) _____									
WHERE DRAWINGS AND/OR SPECIFICATIONS ARE REQUIRED:									
					PROCEED THROUGH ☐ A&S ☐ M&E ☐ CONTRACT ARCH'T.				
DRAWING CHANGE REQUIRED:					DRAWING CHANGE TO BE PREPARED BY:				
1. ☐ DUE TO CHANGE IN BASIC DESIGN					☐ PBS				
2. ☐ TO CORRECT OR CLARIFY ORIGINAL DRAWINGS					☐ CONTRACT ARCH'T.				
(Division Director) _____ (Date) _____									

APPENDIX B.
Seattle
DIAGRAMATIC
SKETCHES

Drawing No.

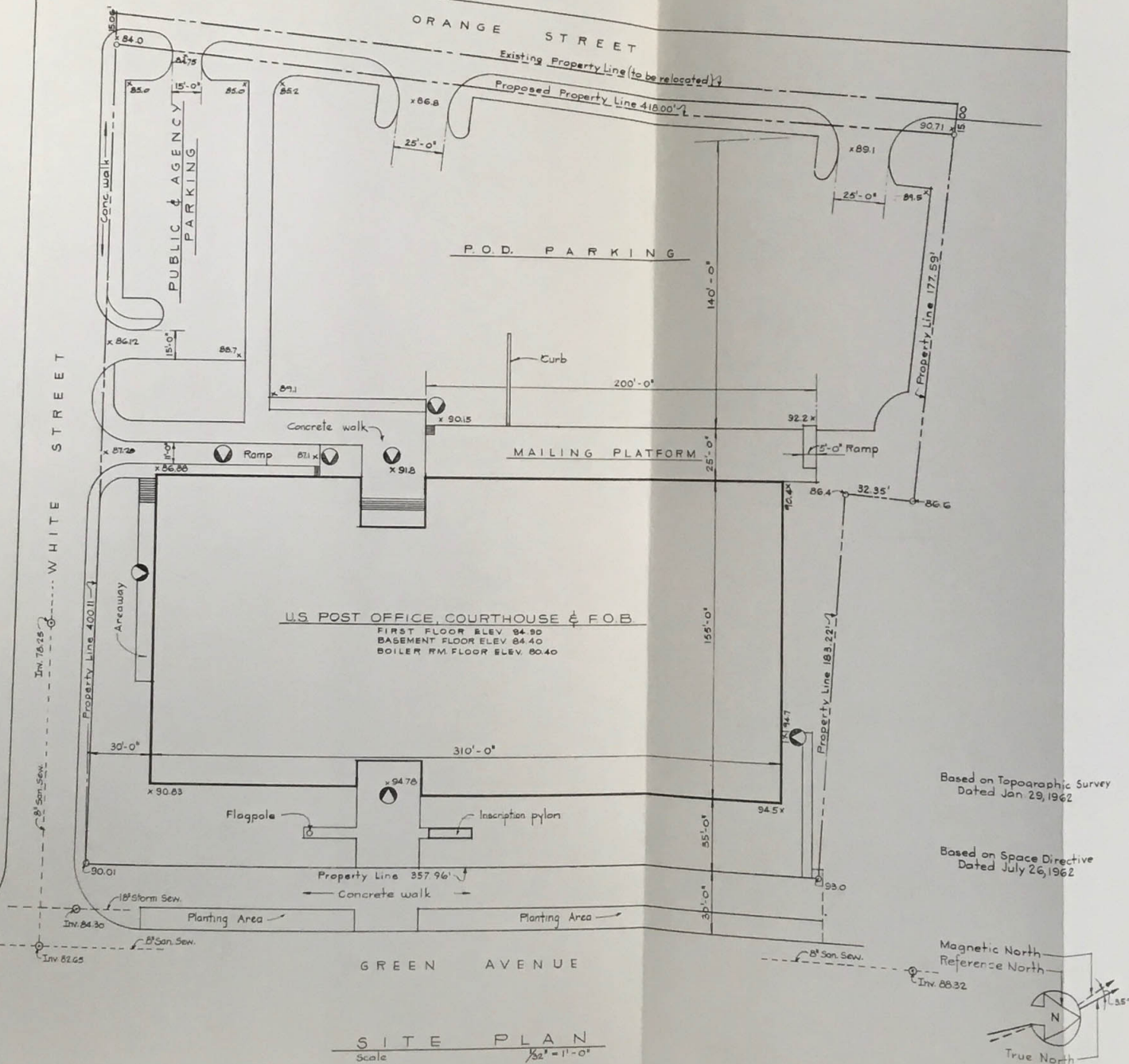
Title

20-1	Site Plan
20-2	Floor Plans
20-3	Floor Plans
20-4	Sections & Elevations

GRAND TOTALS OF AREAS (IN SQUARE FEET)

FLOORS	NET ADJ. ± CUST.	RESERVE	TOTAL NET ASSIGN	GROSS
BASEMENT	4,931	0	4,931	13,904
FIRST FLOOR	40,406	3,920	44,326	51,780
SECOND	14,841	0	14,841	21,740
THIRD	9,085	0	9,085	19,251
PENTHOUSE	0	0	0	2,600
TOTALS	68,263	3,920	72,183	109,275

% OF TOTAL NET AREA TO GROSS AREA = 66.4%
VOLUME OF BUILDING = 1,726,493 CUBIC FEET



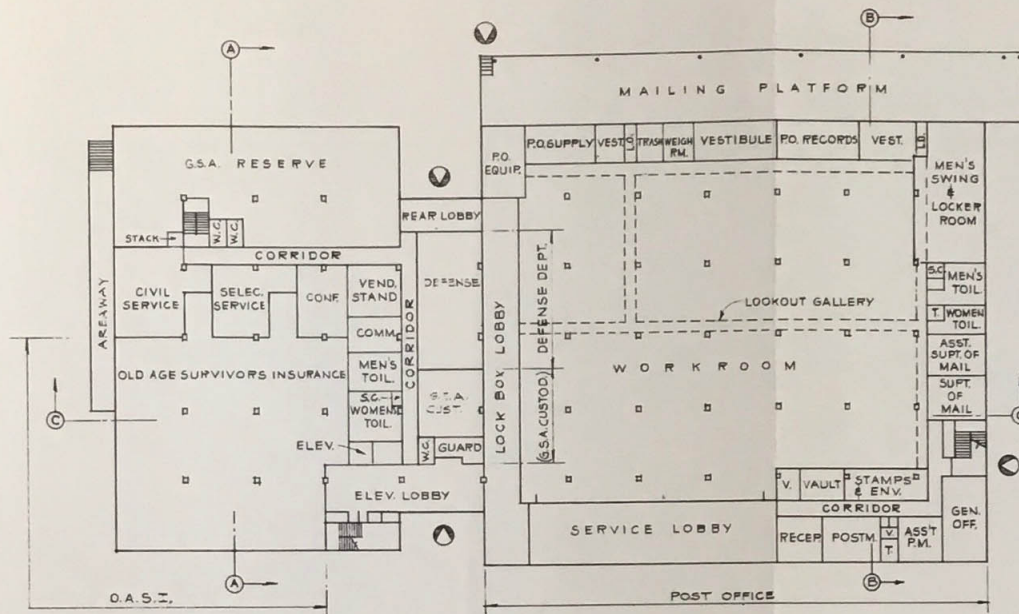
SITE PLAN
Scale 1/32" = 1'-0"

ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA
For current GSA requirements refer to design data, standard details, and approved space and project directives for each project.

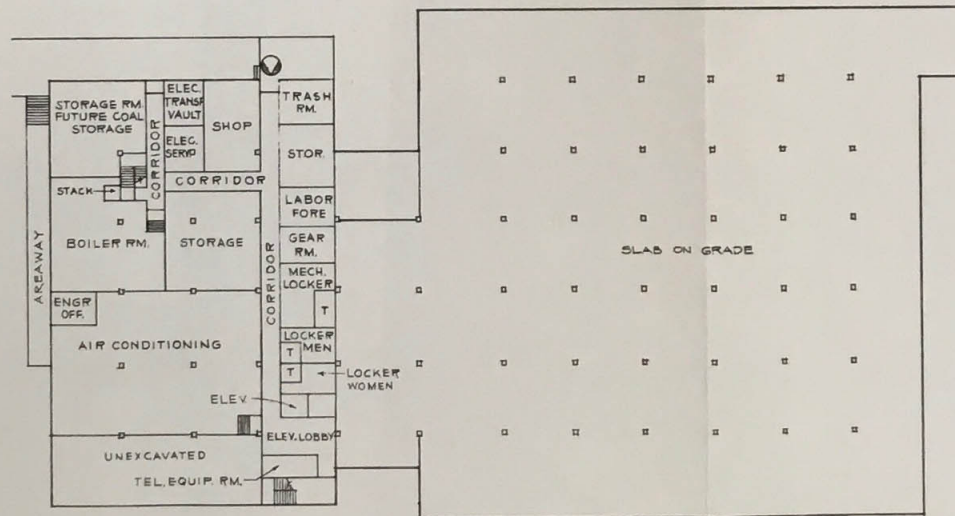
NOTE
Make Diagrammatic Sketches in pencil.

SMITH, BLANK AND SMITH ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT	U.S. POST OFFICE COURTHOUSE & F.O.B.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	60-000	FILE NO.	
DRAWN BY	Hein	CHECKED BY	J. Parker
DRAWING TITLE	SITE PLAN		
DIAGRAMMATIC SKETCHES			
DRAWING NO.	20-1		



FIRST FLOOR PLAN
Scale $\frac{1}{32}'' = 1'-0''$



BASEMENT FLOOR PLAN
Scale $\frac{1}{32}'' = 1'-0''$

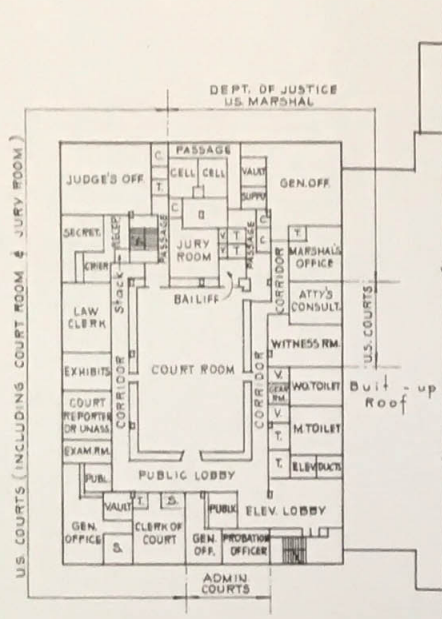
Based on Space Directive
Dated July 26, 1962

BASEMENT		NET SQUARE FEET	
AGENCY		REQUESTED	PROVIDED
G.S.A. (CUSTODIAL)		4,790	4,731
TOTALS:		4,790	4,731
FIRST FLOOR			
AGENCY			
G.S.A. (CUSTODIAL)		800	761
DEFENSE		1,100	1,080
OLD AGE SURV. INS.		6,000	6,140
SELECTIVE SERV.		600	630
CIVIL SERVICE		850	830
G.S.A. (RESERVE)		3,900	3,928
POST OFFICE		30,650	30,765
TOTALS:		43,900	44,134

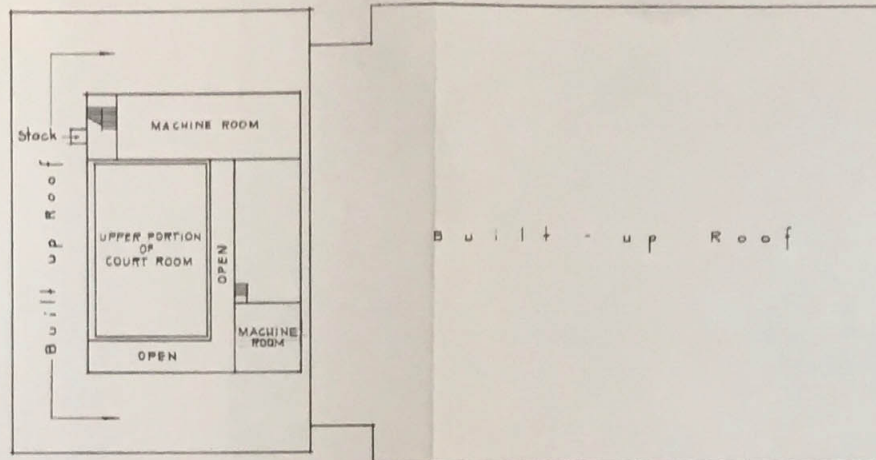
ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA
For current GSA requirements refer to design data, standard details, and approved space and project directives for each project

**SMITH, BLANK AND SMITH
ARCHITECTS**

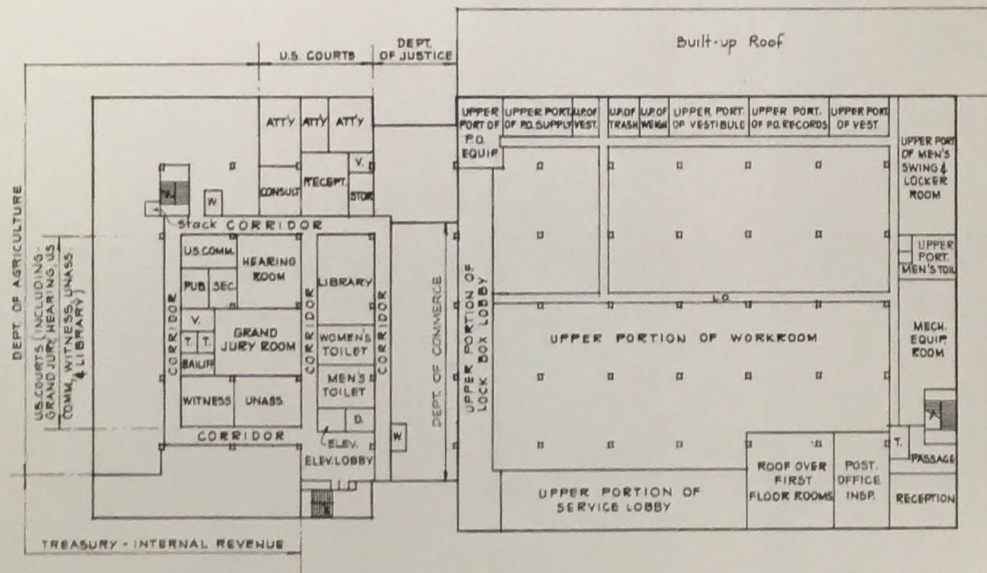
APPROVED			
	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE . WASHINGTON, D. C.			
PROJECT	U.S. POST OFFICE, COURT HOUSE & F.O.B.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	Hein	DATE 8/24	CHECKED BY J. Parker
DRAWING TITLE	FLOOR PLANS		
DIAGRAMMATIC SKETCHES			
DRAWING NO.	20-2		



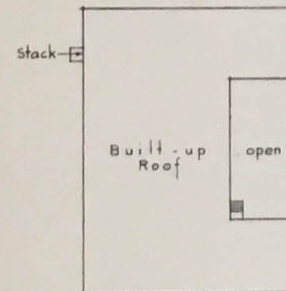
THIRD FLOOR PLAN
Scale: $\frac{1}{32}'' = 1'-0''$



PENTHOUSE AND MAIN ROOF PLAN
Scale: $\frac{1}{32}'' = 1'-0''$



SECOND FLOOR PLAN
Scale: $\frac{1}{32}'' = 1'-0''$

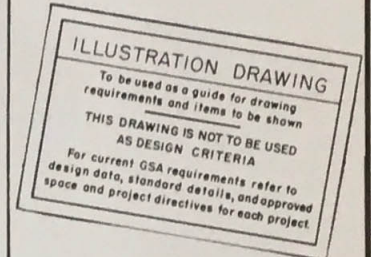


PENTHOUSE ROOF PLAN
Scale: $\frac{1}{32}'' = 1'-0''$

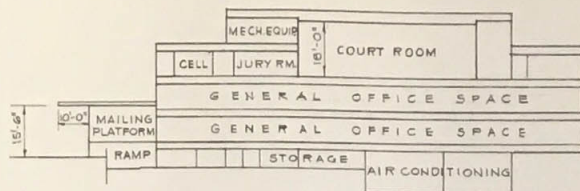


Based on Space Directive
Dated July 26, 1962

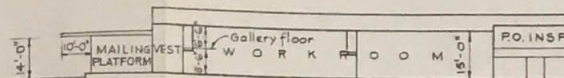
SECOND FLOOR	NET SQUARE FEET	
AGENCY	REQUESTED	PROVIDED
AGRICULTURE	4,550	4,805
COMMERCE	1,950	2,096
JUSTICE	1,000	960
U.S. COURTS	4,200	4,526
POST OFFICE	1,000	1,046
TREASURY	1,000	1,556
G.S.A. (CUSTODIAL)	20	20
TOTALS:	14,720	14,841
THIRD FLOOR		
AGENCY	REQUESTED	PROVIDED
U.S. COURTS	7,000	7,162
JUSTICE	1,500	1,511
G.S.A. (CUSTODIAL)	40	42
TOTALS:	8,540	9,055
GRAND TOTALS OF BUILDING:	71,950	72,809



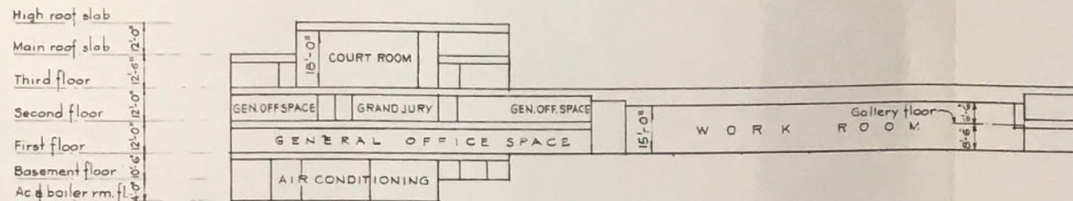
SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
	GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE • WASHINGTON, D. C.		
PROJECT	U.S. POST OFFICE, COURT HOUSE & F.O.B.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	Hein	JUNE 5 '64	CHECKED BY J. Parker
DRAWING TITLE	FLOOR PLANS		
DIAGRAMMATIC SKETCHES			
DRAWING NO.	20-3		



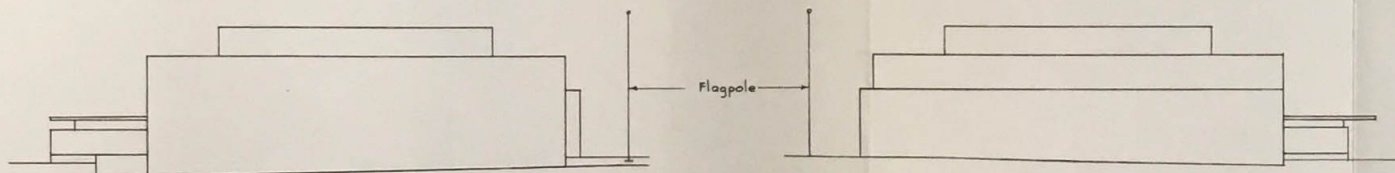
TRANSVERSE SECTION THRU OFFICE BLDG. A-A
Scale: $\frac{1}{32}'' = 1'-0''$



TRANSVERSE SECTION THRU POST OFFICE B-B
Scale: $\frac{1}{32}'' = 1'-0''$

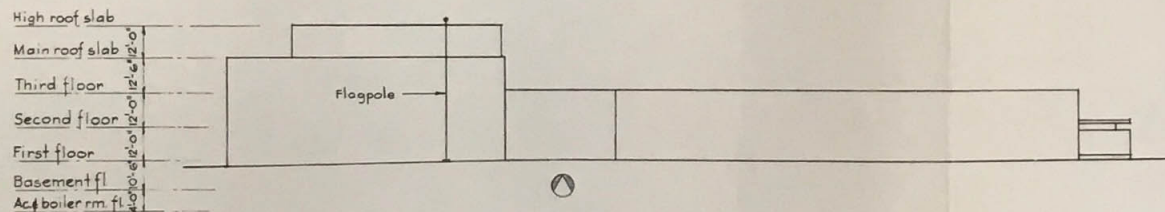


LONGITUDINAL SECTION THRU BLDG. C-C
Scale: $\frac{1}{32}'' = 1'-0''$

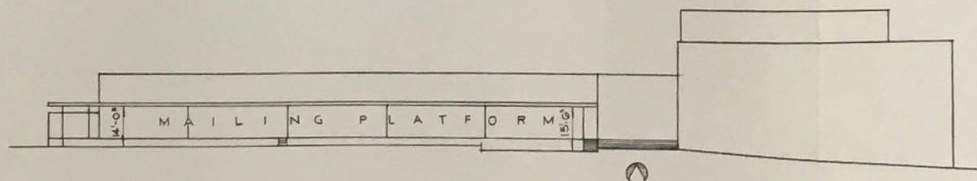


SOUTH ELEVATION
Scale: $\frac{1}{32}'' = 1'-0''$

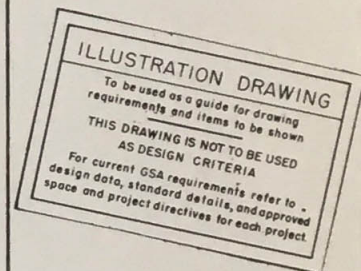
NORTH ELEVATION
Scale: $\frac{1}{32}'' = 1'-0''$



EAST ELEVATION
Scale: $\frac{1}{32}'' = 1'-0''$



WEST ELEVATION
Scale: $\frac{1}{32}'' = 1'-0''$



SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED			
	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.			
PROJECT	US POST OFFICE COURT HOUSE & F.O.B.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	Hein	CHECKED BY	J. Parker
DRAWING TITLE	SECTIONS & ELEVATIONS		
DIAGRAMMATIC SKETCHES			
DRAWING NO.	20-4		

Based on Space Directive
Dated July 26, 1962

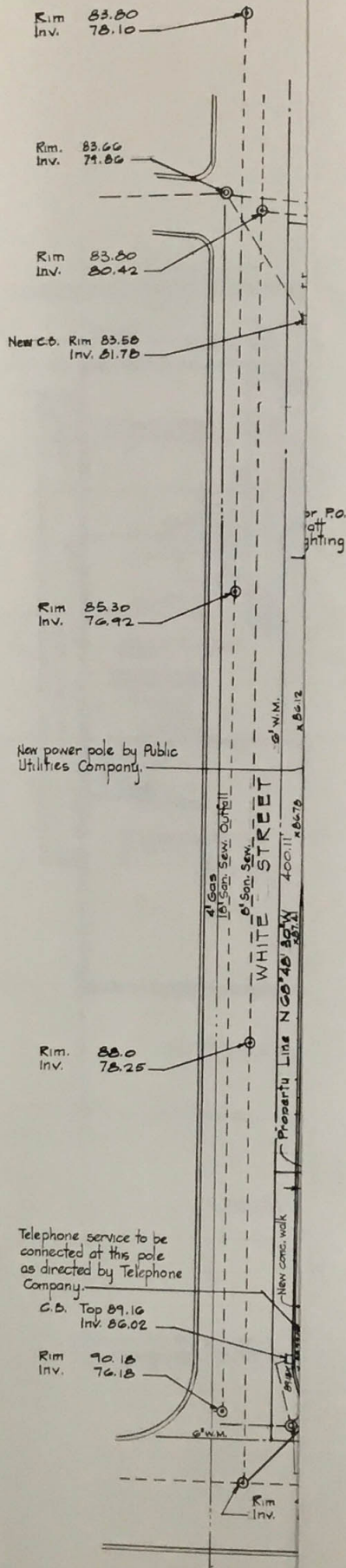
APPENDIX C.
SAMPLE
TENTATIVE SKETCHES



Drawing No.

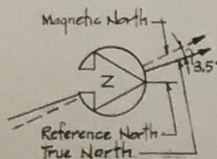
Title

21-1	Site Plan
21-2	Basement Floor Plan
21-3	First Floor Plan
21-4	Second Floor Plan
21-5	Third Floor Plan
21-6	Penthouse Plan and Roof Plans
21-7	Elevations
21-8	Longitudinal and Transverse Sections
21-9	Exterior Wall Sections
21-10	Foundation Plan
21-11	First Floor Framing Plan
21-12	Second Floor Framing Plan
21-13	Third Floor Framing Plan
21-14	Roof Framing Plan
21-15	Basement Mechanical Plan
21-16	First Floor Mechanical Plan
21-17	Second Floor Mechanical Plan
21-18	Third Floor Mechanical Plan
21-19	Penthouse Mechanical Plan and Heating Flow Diagram
21-20	Mechanical Details
21-21	Basement Electrical Plan
21-22	First Floor Electrical Plan
21-23	Second Floor Electrical Plan
21-24	Third Floor Electrical Plan
	Rendered Perspective



Based on Topographic Survey
Dated January 29, 1962.

Based on Space Directive
Dated July 26, 1962.



GRAND TOTALS OF AREAS (IN SQUARE FEET)

FLOORS	NET AGY # CUST.	RESERVE	TOTAL NET ASSIGN.	GROSS
BASEMENT	4,931	0	4,931	13,604
FIRST FLOOR	49,404	3,920	44,134	54,730
SECOND	14,841	0	14,841	21,740
THIRD	9,035	0	9,035	15,231
PENTHOUSE	0	0	0	2,600
TOTALS	69,211	3,920	72,809	104,925

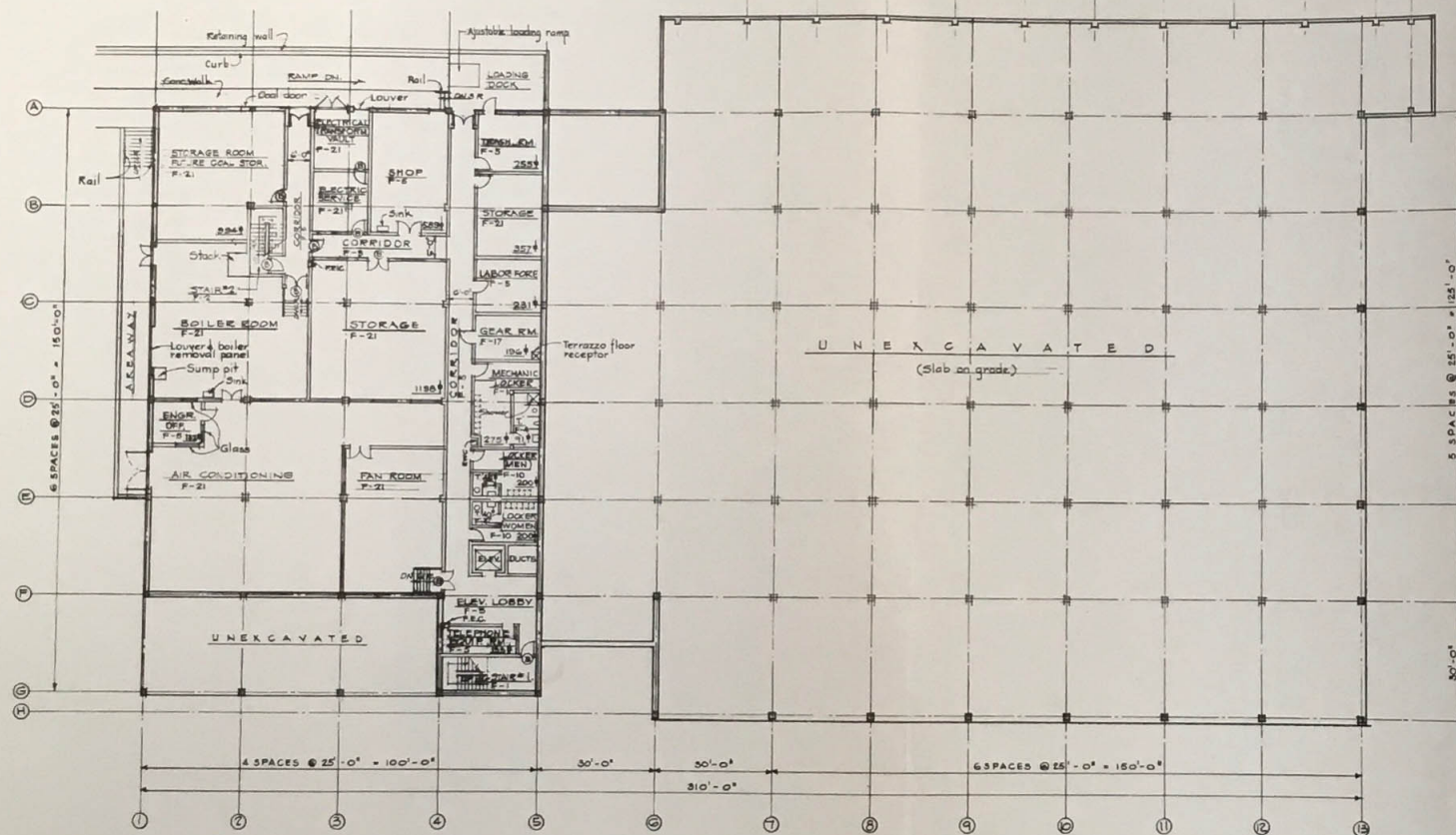
% OF TOTAL NET AREA TO GROSS AREA = 67.4%
VOLUME OF BUILDING = 1,726,693 CUBIC FEET.

ILLUSTRATION DRAWING
To be used as a guide for drawing
requirements and items to be shown
THIS DRAWING IS NOT TO BE USED
AS DESIGN CRITERIA
For current GSA requirements refer to
design data, standard details, and approved
space and project directives for each project.

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT	US POST OFFICE, COURTHOUSE & F.O.B.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00 - 000	FILE NO.	
DRAWN BY	A. Bregida	CHECKED BY	J. Parker
DRAWING TITLE	SITE PLAN		
TENTATIVE SKETCHES			
DRAWING NO.	21 - 1		

BASEMENT FLOOR		NET SQUARE FEET	
AGENCY		REQUESTED	PROVIDED
GSA (CUSTODIAL)		4,790	4,931
TOTALS		4,790	4,931

Ⓢ Indicates class "B" labeler self closing fire door.



BASEMENT FLOOR PLAN
SCALE 1/8" = 1'-0"

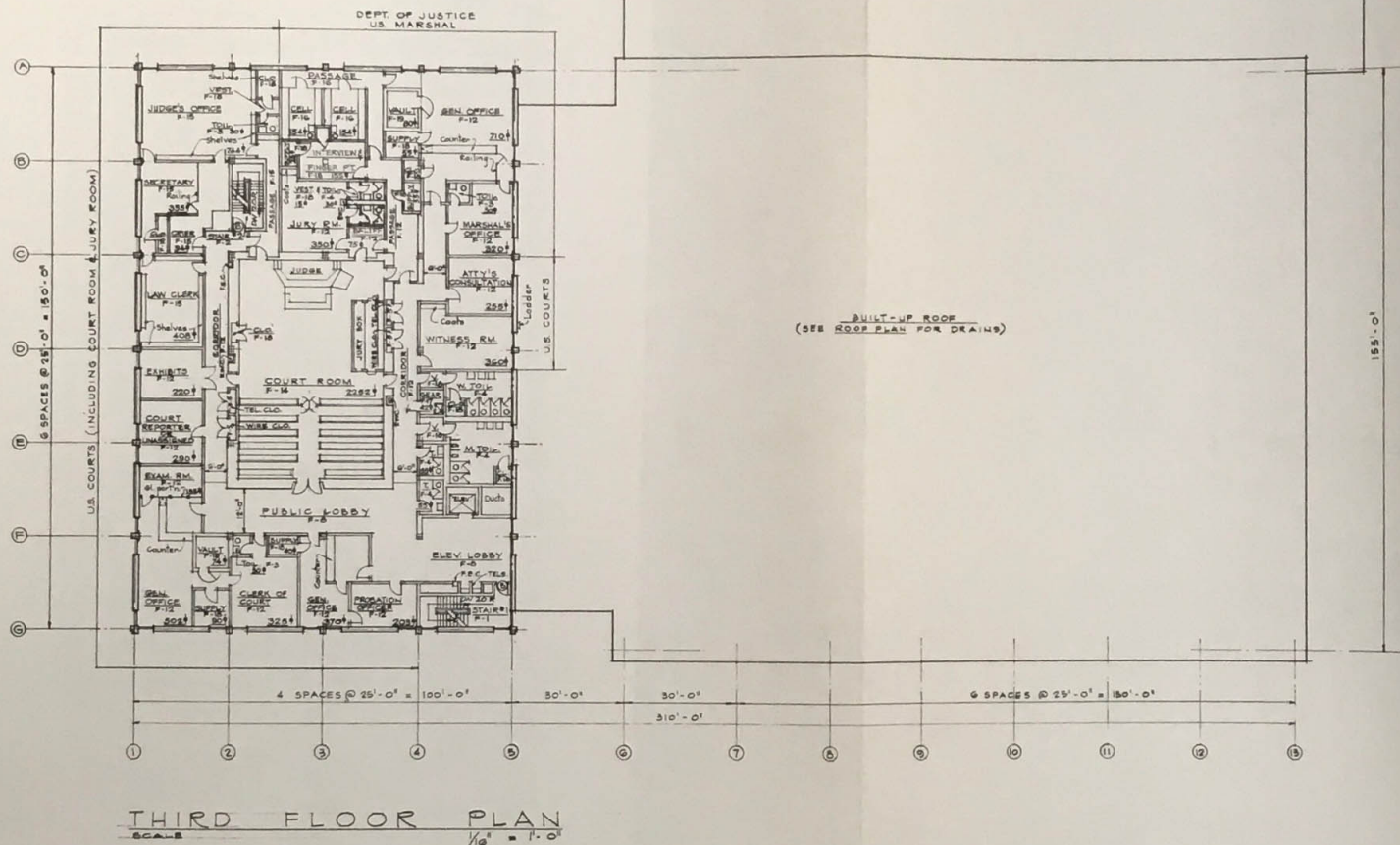
ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown as DESIGN CRITERIA
THIS DRAWING IS NOT TO BE USED FOR CURRENT GSA REQUIREMENTS (refer to design data, standard details, and approved space and project directives for each project)

SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	Mechanical	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	US POST OFFICE, COURTHOUSE & F.D.B.			
LOCATION	CLARKSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.		
DRAWN BY	A. Bregda	CHECKED BY	J. Parker	
DRAWING TITLE	BASEMENT FLOOR PLAN TENTATIVE SKETCHES			
DELIVERED NO.	21-2			



Based on Space Directive
Dated July 26, 1962.



THIRD FLOOR		.NET SQUARE FEET	
AGENCY		REQUESTED	PROVIDED
U.S. COURTS		7,000	7,162
JUSTICE		1,500	1,811
G.S.A. (CUSTODIAL)		40	42
TOTALS		8,540	9,035

ILLUSTRATION DRAWING

To be used as a guide for drawing requirements and items to be shown.

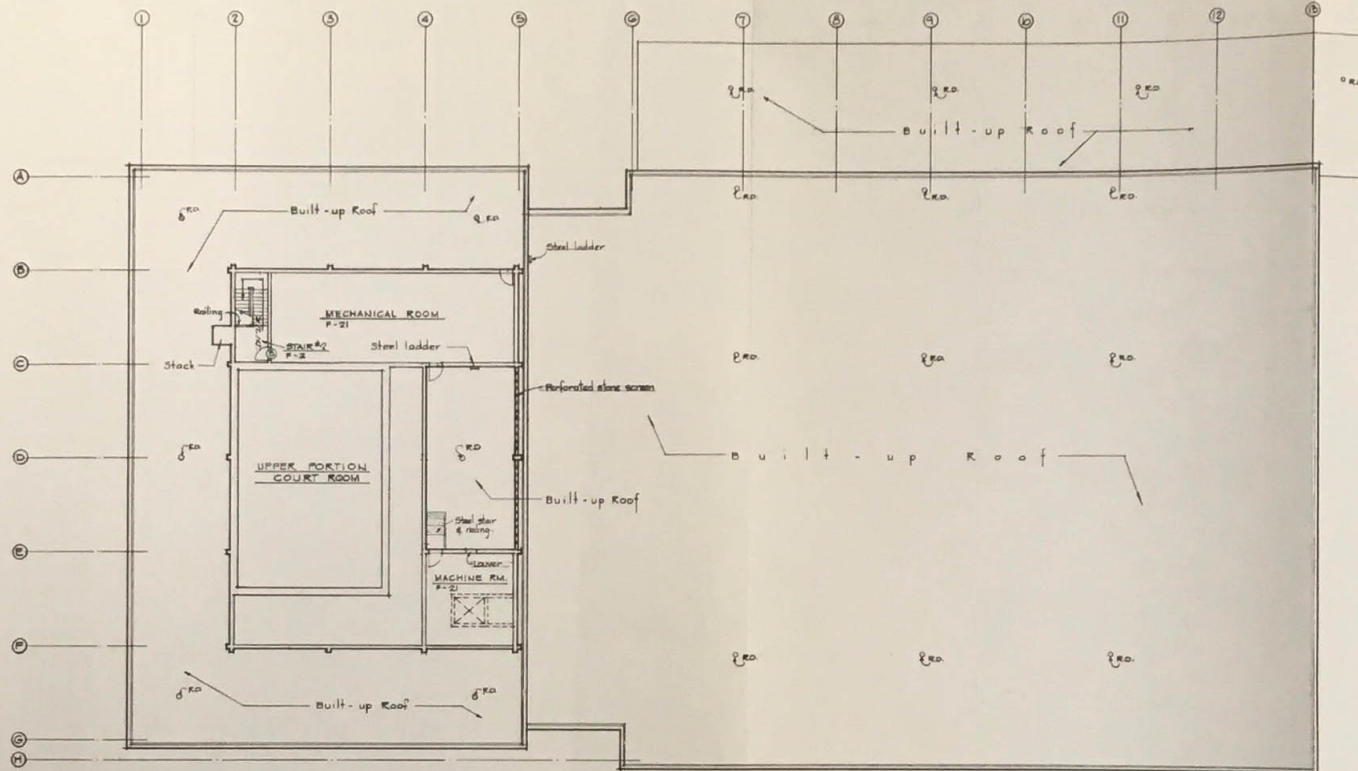
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA.

For current GSA requirements refer to design data, standard details, and approved space and project directives for each project.

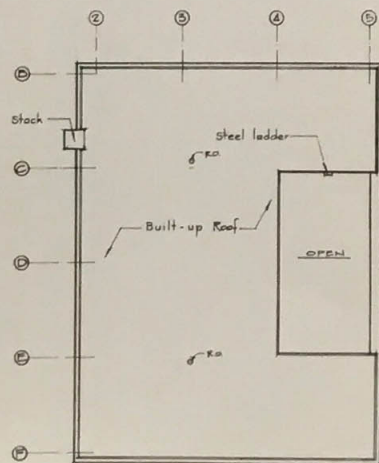
SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL/STRUCTURAL	MECHANICAL/ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.		
PROJECT	U.S. POST OFFICE COURTHOUSE (R.O.B.)	
LOCATION	CLAWSON, IOWA	
STREET	GREEN AVE. AND WHITE ST.	
PROJ. NO.	00-000	FILE NO.
DRAWN BY	A. Briggs, JUNE '64	CHECKED BY J. Parker
DRAWING TITLE	THIRD FLOOR PLAN	
DRAWING NO.	TENTATIVE SKETCHES	
	21-5	

Based on Space Directive
Dated July 26, 1962.



PENTHOUSE & MAIN ROOF PLAN
SCALE $\frac{1}{16}'' = 1'-0''$



PENTHOUSE ROOF PLAN
SCALE $\frac{1}{16}'' = 1'-0''$

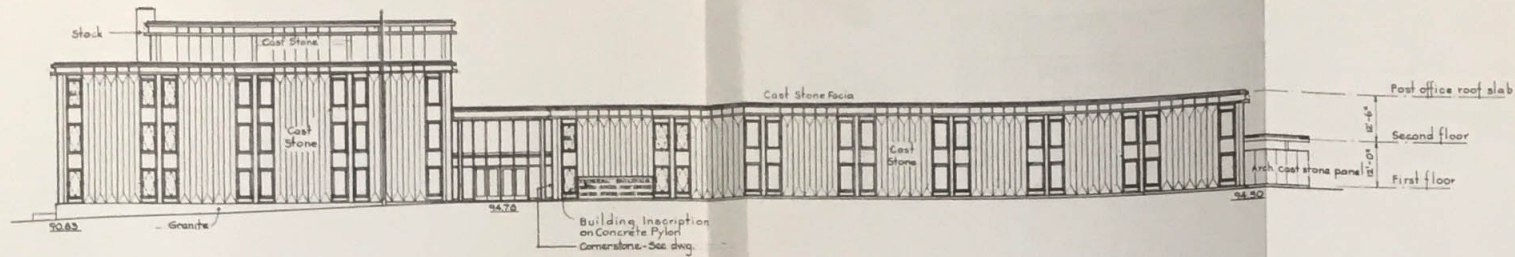
ILLUSTRATION DRAWING
To be used as a guide for drawing
requirements and items to be shown
THIS DRAWING IS NOT TO BE USED
AS DESIGN CRITERIA
For current GSA requirements refer to
design data, standard details, and approved
space and project directives for each project

SMITH, BLANK AND SMITH
ARCHITECTS

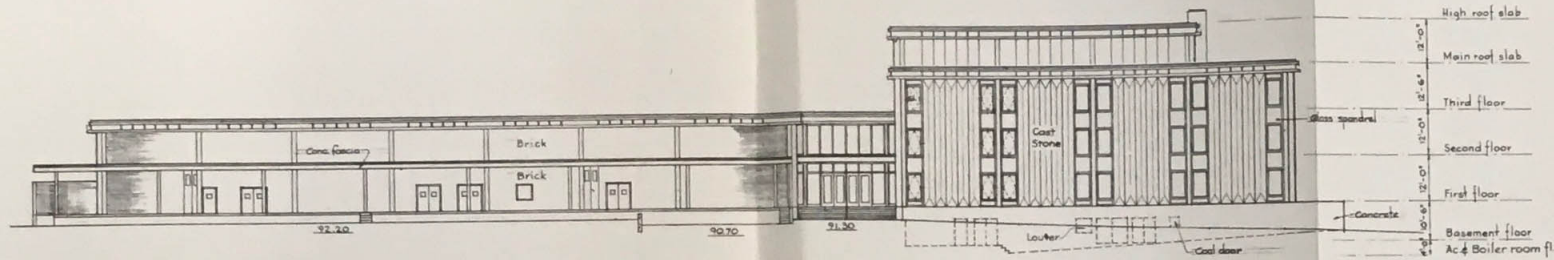
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL		
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.						
PROJECT	DISPOST OFF CO STW-65305					
LOCATION	CLAWSON, IOWA					
STREET	GREEN AVE. AND WHITE ST.					
PROJ. NO.	00-000	FILE NO.				
DRAWN BY	A. Drew, June 5, 64					
CHECKED BY	J. S. Smith					
DRAWING TITLE	PENTHOUSE & ROOF PLANS					
DRAWING NO.	21-6					



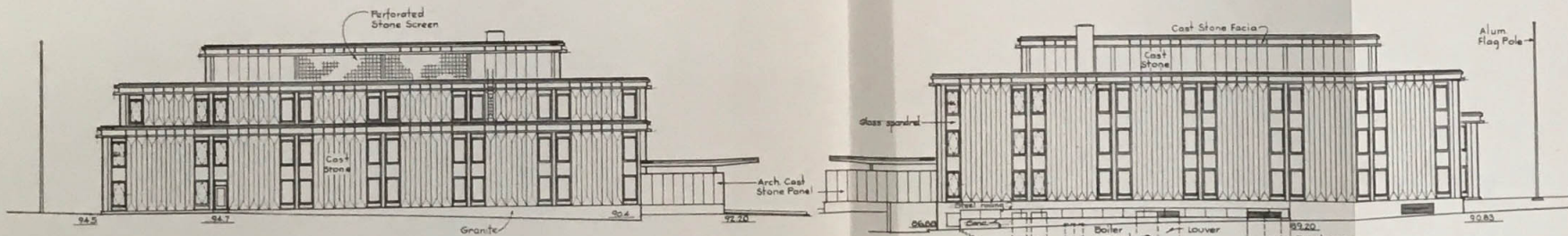
Based on Space Directive
Dated July 26, 1962.



EAST ELEVATION
Scale 1/16" = 1'-0"



WEST ELEVATION
Scale 1/16" = 1'-0"



NORTH ELEVATION
Scale 1/16" = 1'-0"

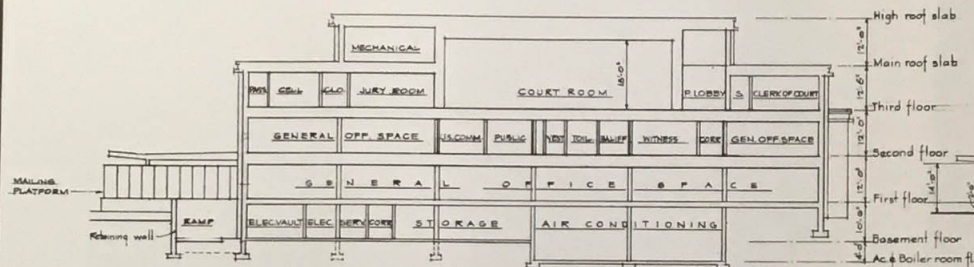
SOUTH ELEVATION
Scale 1/16" = 1'-0"

ILLUSTRATION DRAWING
To be used as a guide for drawing
requirements and items to be shown
THIS DRAWING IS NOT TO BE USED
AS DESIGN CRITERIA
For current GSA requirements refer to
design data, standard details, and approved
space and project directives for each project.

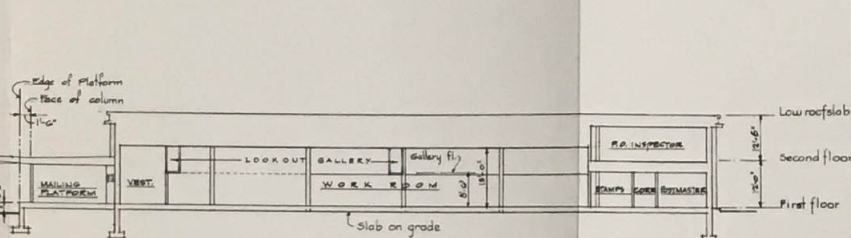
SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	U.S. POST OFFICE COURTHOUSE PROB.			
LOCATION	CLAWSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.		
DRAWN BY	G. Ham	JUNE 1964	DESIGNED BY	J. Parker
DRAWING TITLE	ELEVATIONS			
	TENTATIVE SKETCHES			
DRAWING NO.	21-7			

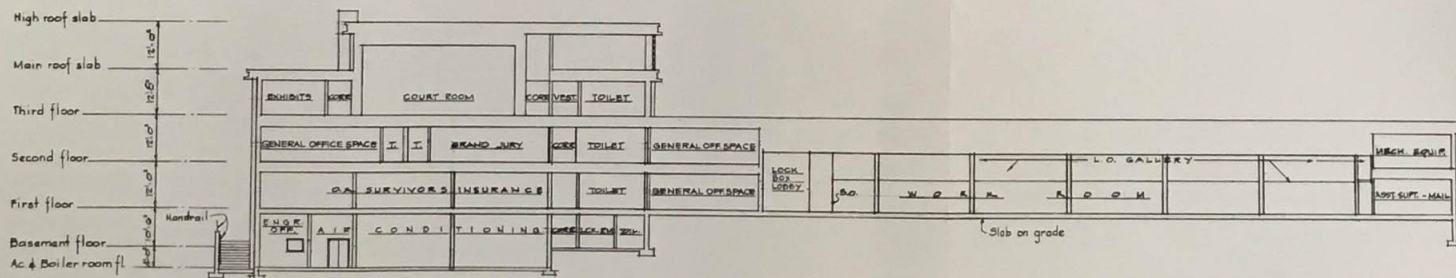
Based on Space Directive
Dated July 26, 1962



TRANSVERSE SECTION THRU OFFICE BLDG.
SCALE $\frac{1}{8}'' = 1'-0''$



TRANSVERSE SECTION THRU POST OFFICE
SCALE $\frac{1}{8}'' = 1'-0''$



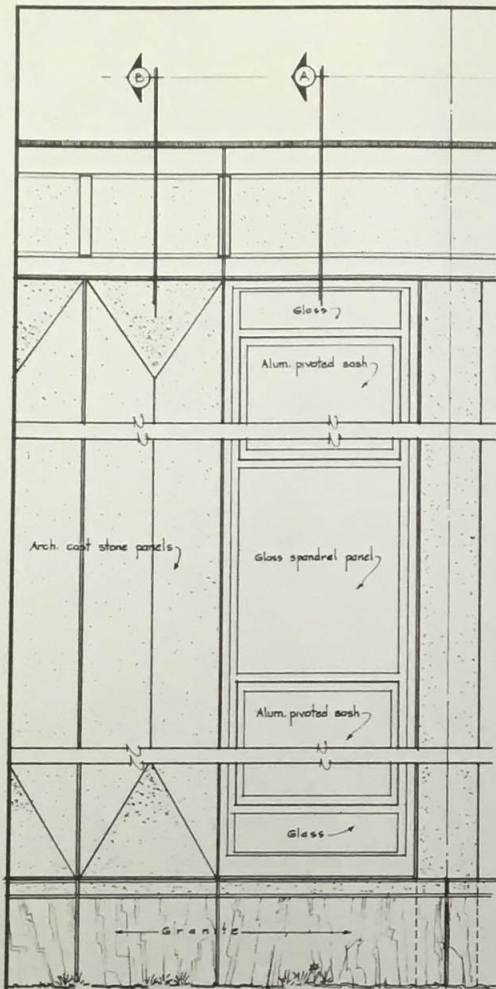
LONGITUDINAL SECTION THRU BLDG.
SCALE $\frac{1}{8}'' = 1'-0''$



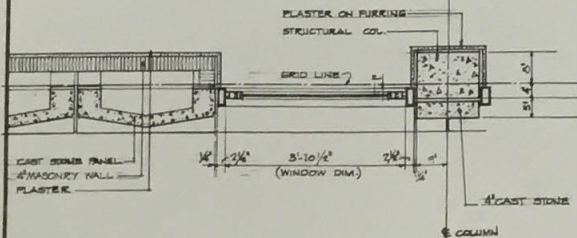
SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL/ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT	POST OFFICE COURTHOUSE \$200,000		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	A. Bregda/JUNE 5, 64	CHECKED BY	J. Parker
DRAWING TITLE	LONGITUDINAL AND TRANSVERSE SECTIONS		
	TENTATIVE SKETCHES		
DRAWING NO.	21-8		

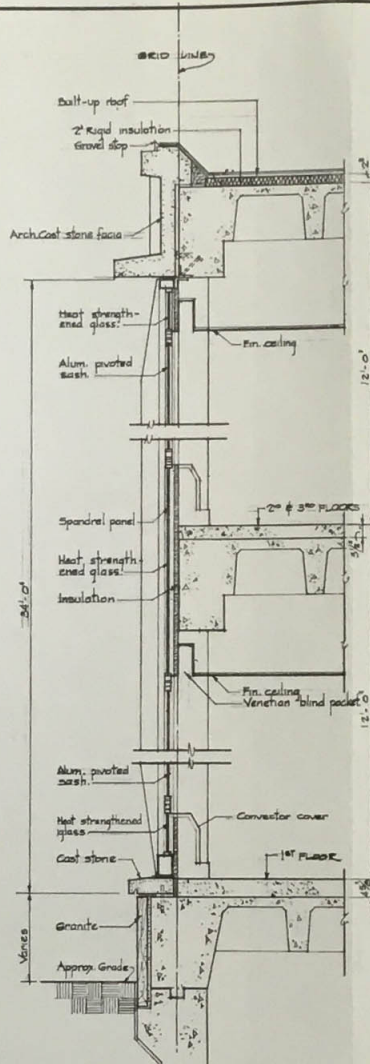
Based on Space Directive
Dated July 26, 1962.



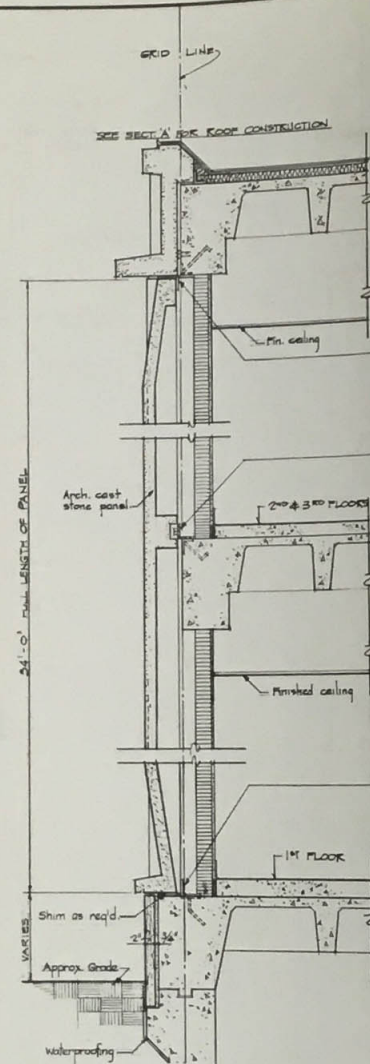
PART ELEVATION
Scale 3/4" = 1'-0"



PART PLAN
Scale 3/4" = 1'-0"



SECTION 'A'
Scale 3/4" = 1'-0"

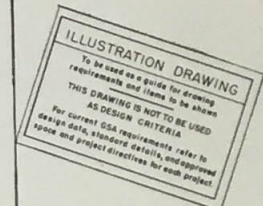


SECTION 'B'
Scale 3/4" = 1'-0"

Pre-cast panels to have clip L @ each end of panel. Weld clip Ls to continuous L anchored to roof beam.

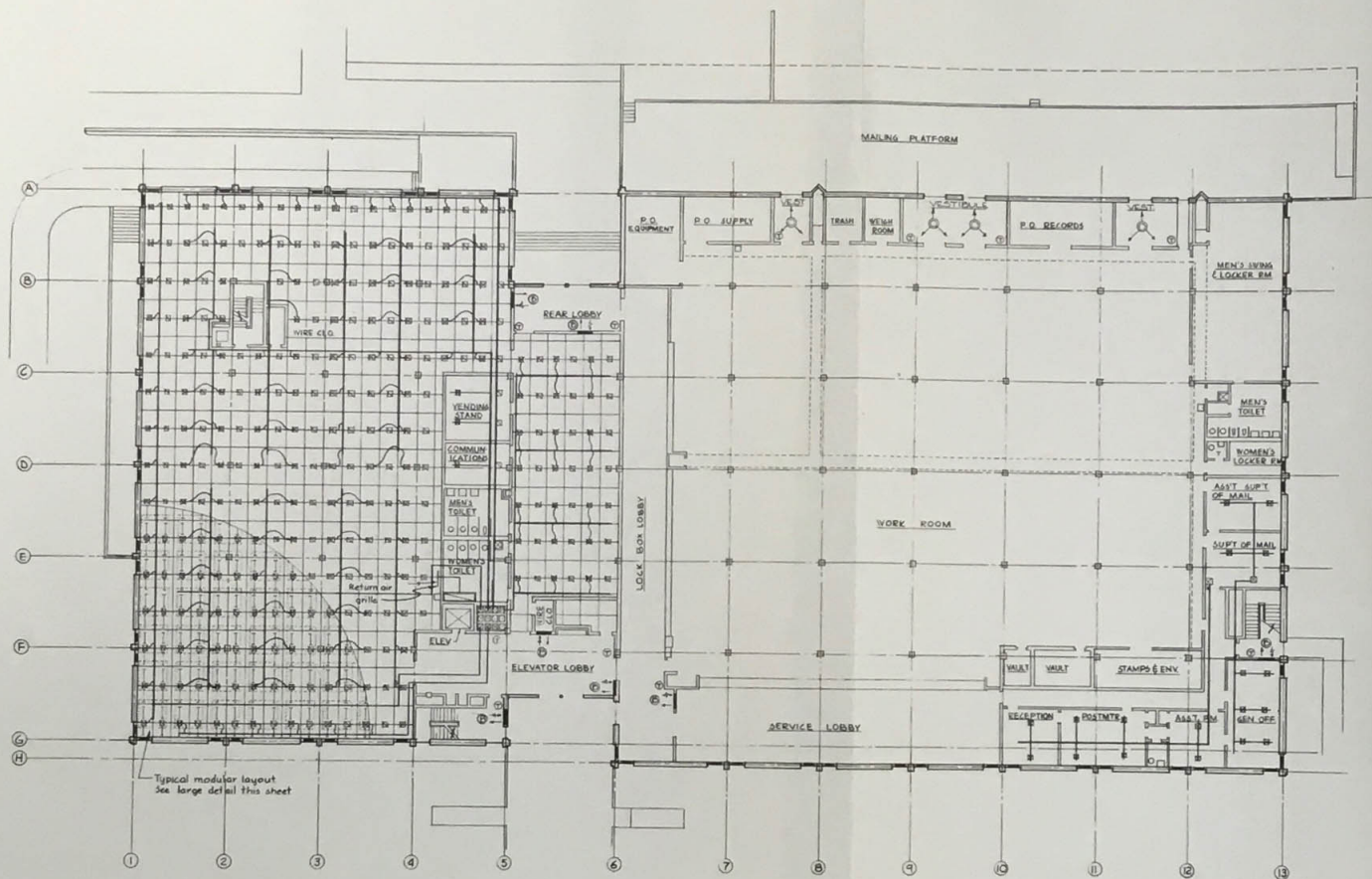
2 clip Ls @ vertical slots & bolted to adjustable inserts in pre-cast panel. Clip Ls to be welded to continuous L anchored in spandrel beam.

Pre-cast panels to have clip L @ each end of panel. Weld L to steel plate insert anchored in floor.

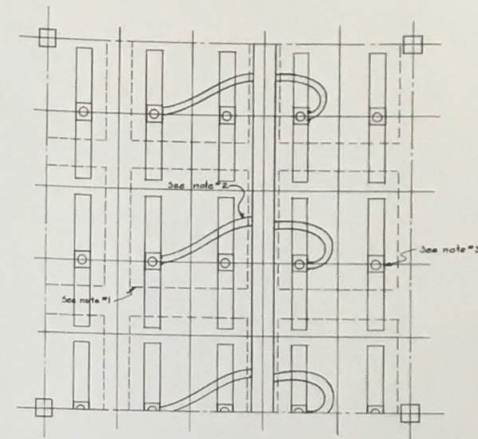


Based on Space Directive
Dated July 26, 1962.

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL/STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT: ILISPOST OFFICE, COURTHOUSE & EGB			
LOCATION: CLAWSON, IOWA			
STREET: GREEN AVE. AND WHITE ST.			
PROJ. NO. DD-000		FILE NO.	
DRAWN BY: A. Dringold, JUNE 27/64		CHECKED BY: L. Parker	
DRAWING TITLE: EXTERIOR WALL SECTIONS			
TENTATIVE SKETCHES			
DRAWING NO.		21-9	



FIRST FLOOR PLAN
SCALE 1/16" = 1'-0"



TYPICAL MODULAR DESIGN

ILLUSTRATION DRAWING
To be used as a guide for drawing
requirements and items to be shown
THIS DRAWING IS NOT TO BE USED
AS DESIGN CRITERIA
For current GSA requirements refer to
design data, standard details, and approved
space and project directives for each project.

RADIATION SYMBOLS

- Unit Heater, vertical projection
- Unit Heater, horizontal projection
- Cabinet Unit Heater, free standing
- Cabinet Unit Heater, wall mounted, recessed
- Convactor or Fined Tube radiation
- Thermostat

GENERAL NOTES

- Dotted line indicates area called "air module". One perforated plate supply ceiling diffuser located in any one of four positions between lighting fixtures will give modular results. Air quantity per outlet to suit load of four architectural modules served.
- Supply outlet to be permanently connected to supply duct with 10'-0" length of insulated flexible duct. Outlet to be available for relocation to any one of modular locations with ceiling construction used.
- Provide a perforated plate diffuser in each air module for return to ceiling plenum. Provide sound trap above return diffuser to effect a 40 DB sound reduction on room to room test method (to be designed by A.E.).

SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	U.S. POST OFFICE COURTHOUSE AND BLDG.			
LOCATION	CLAWSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.		
DRAWN BY	PAM	JUNE 1964	CHECKED BY	J. Parker
TITLE	FIRST FLOOR MECHANICAL PLAN TENTATIVE SKETCHES			
DRAWING NO.	21-16			

Based on Space Directive
Dated July 26, 1962

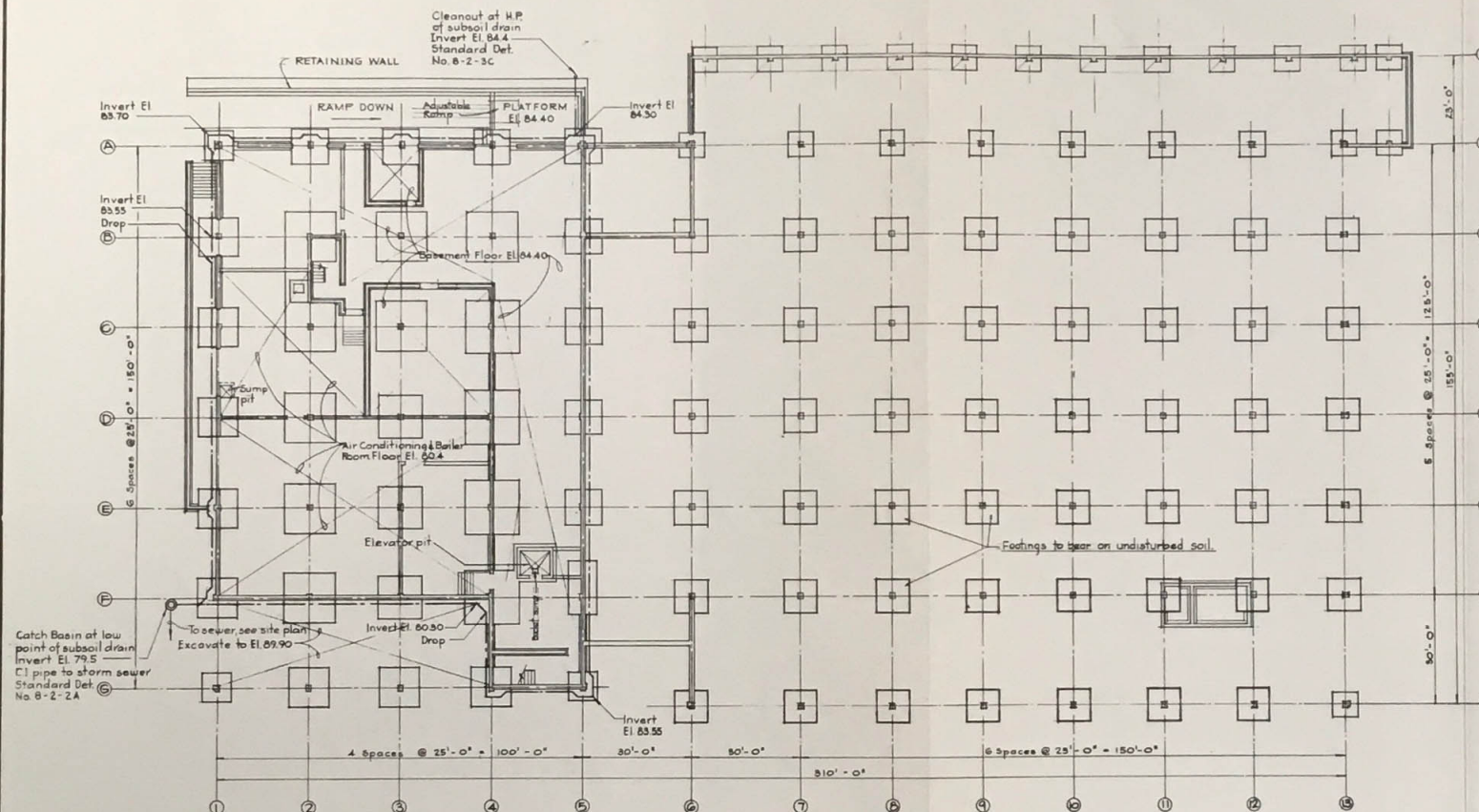
SCHEDULE OF STRUCTURAL STANDARD DETAILS

DRAWING NO.	DETAIL NO.	DESCRIPTION
B-2-1E	B.C.D. 48	WALL DAMPPROOFING AND TILE DRAIN
B-4-1B		CONCRETE SLAB ON THE GROUND
B-4-2A		JOINTS IN CONCRETE SLAB ON THE GROUND
B-5-1B		CONCRETE WALL REINFORCEMENT
B-5-3A		VERTICAL CONSTRUCTION JOINT IN CONC. WALLS
B-5-4B		CONTROL JOINT IN CONCRETE WALLS
B-6-1A		NOTES FOR REINFORCED CONCRETE
B-6-6A		ONE-WAY BAR REINFORCEMENT, SOLID CONCRETE SLABS
B-6-7A		TWO-WAY BAR REINFORCEMENT, SOLID CONCRETE SLABS
B-6-11C		CONTROL JOINTS IN CONCRETE FRAME CONSTRUCTION
B-6-13A		JOINTS IN CONCRETE RETAINING WALLS
B-7-5A		LOOKOUT HANGER CONNECTIONS
B-8-9C		CONCRETE ROOF SLAB - METAL FILLERS

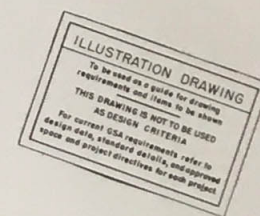
Suffix letter indicates latest revisions

The above Structural Standard Details shall be used where they apply on this project unless otherwise detailed or noted. See Structural Handbook and Design Data 29-1-1 for check list of items required.

NOTE:
Provide a vapor barrier and $\frac{1}{4}$ " porous fill under all concrete slabs on grade.

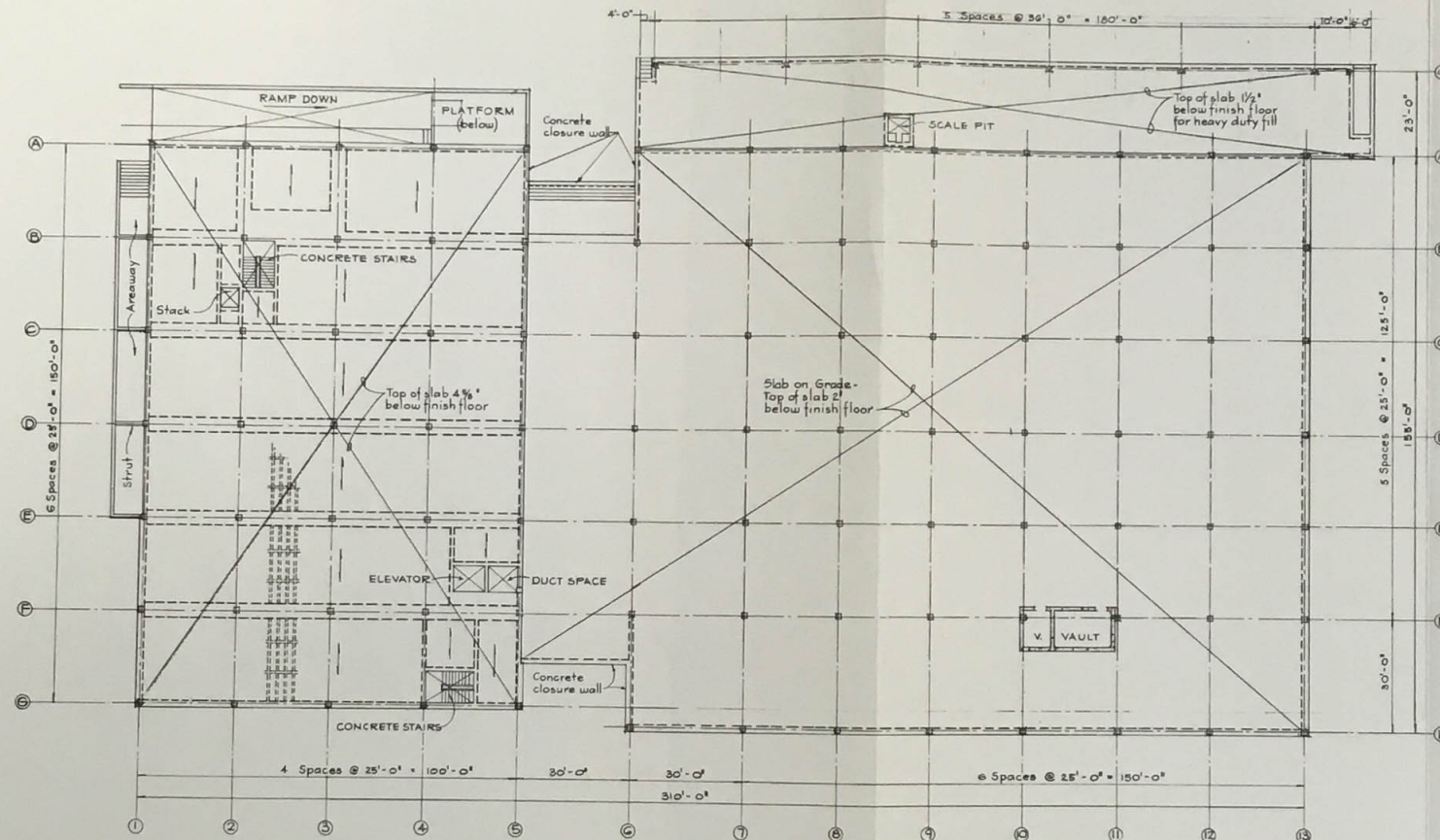


FOUNDATION PLAN
Scale 1/16" = 1'-0"



SMITH, BLANK AND SMITH ARCHITECTS			
APPROVES	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT: U.S. POST OFFICE COURTHOUSE & R.O.B.			
LOCATION: CLAWSON, IOWA			
STREET: GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	HEIN	CHECKED BY	J. F. BURKE
DRAWING TITLE	FOUNDATION PLAN		
TENTATIVE SKETCHES			
DRAWING NO.	21-10		

Based on Space Directive
Dated July 26, 1962



FIRST FLOOR FRAMING PLAN

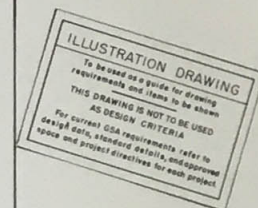
SCALE

0 5 10 15 20 25



1/16" = 1'-0"

NOTES
— Indicates direction of span for concrete ribbed slab (metal fillers generally)
See architectural sections, details and schedules for floor toppings and finishes.



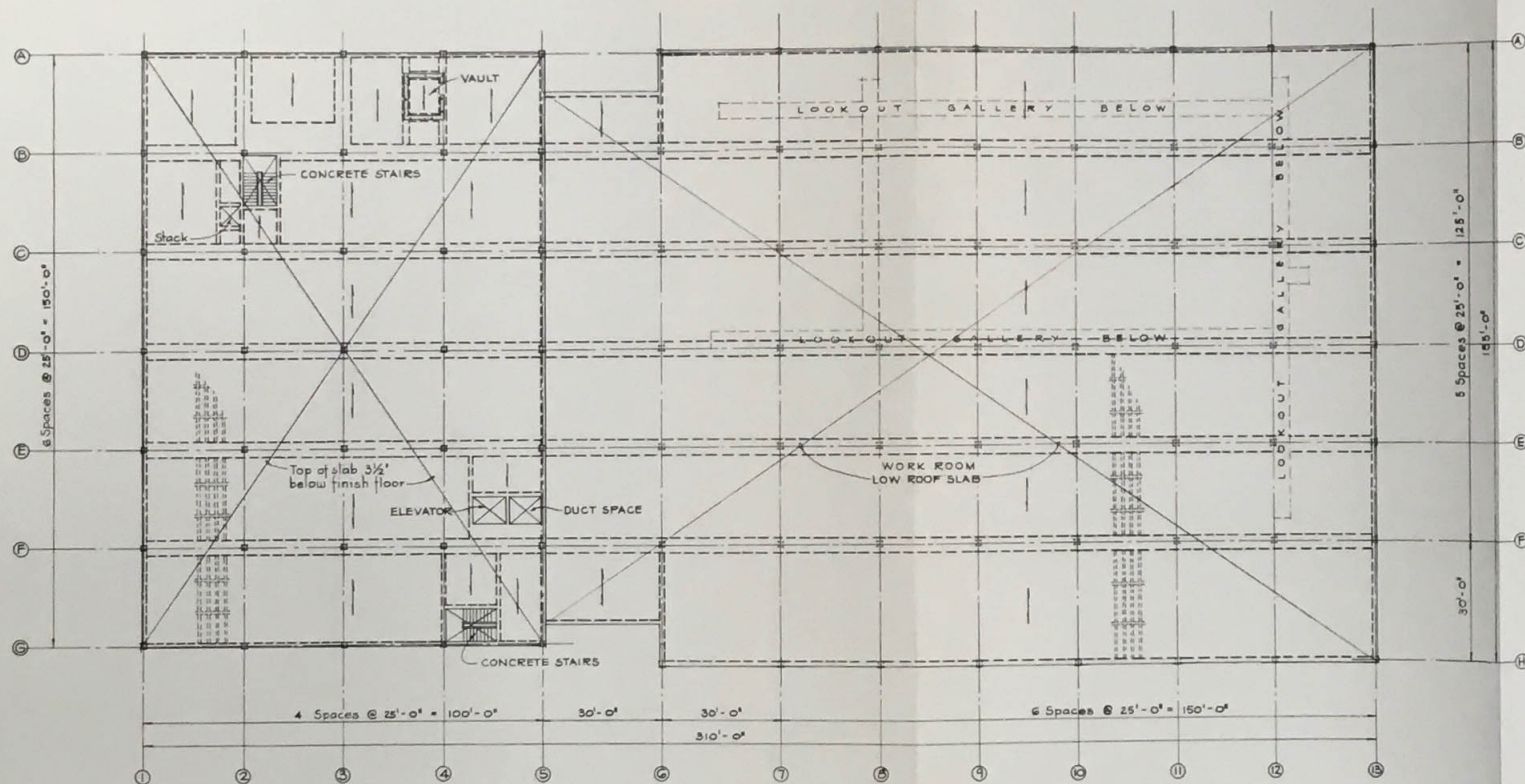
SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	U.S. POST OFFICE, COURTHOUSE & F.O.B.			
LOCATION	CLAWSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.		
DRAWN BY	Hein	JUNE 5, 64	CHECKED BY	J. Porter
DRAWING TITLE	FIRST FLOOR FRAMING PLAN			
	TENTATIVE SKETCHES			
DRAWING NO.	21-11			

Based on Space Directive
Dated July 26, 1962



NOTES
 — Indicates direction of span for concrete ribbed slab (metal fillers generally)
 See architectural sections, details and schedules for floor toppings and finishes.



THIRD FLOOR & LOW ROOF FRAMING PLAN
 SCALE 1/16" = 1'-0"

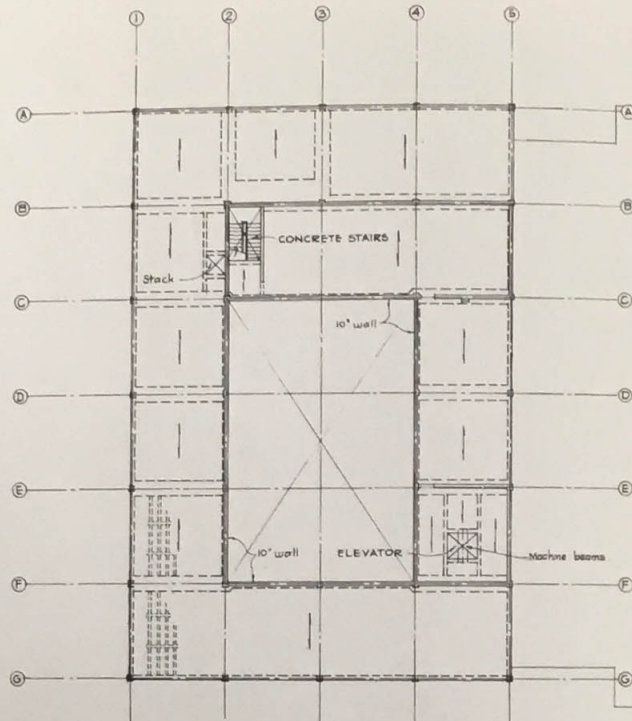
0 5 10 15 20 25
 1" = 10'



Based on Space Directive
 Dated July 26, 1962

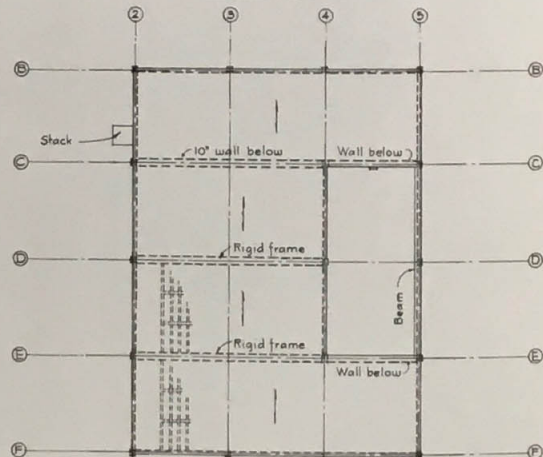
ILLUSTRATION DRAWING
 To be used as a guide for drawing requirements and items to be shown
 THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA
 For current GSA requirements refer to design data, standard details, and approved space and project directives for each project

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT U.S. POST OFFICE COURTHOUSE & P.O.B.			
LOCATION CLAWSON, IOWA			
STREET GREEN AVE. AND WHITE ST.			
FILE NO.	00-000	FILE NO.	
DRAWN BY	Hein	CHECKED BY	J. Parker
DRAWING TITLE THIRD FLOOR & LOW ROOF FRAMING PLAN			
TENTATIVE SKETCHES			
DRAWING NO.	21-13		



ROOF FRAMING PLAN

SCALE 0 5 10 15 20 25 $\frac{1}{16}'' = 1'-0''$



PENTHOUSE ROOF FRAMING PLAN

SCALE 0 5 10 15 20 25 $\frac{1}{16}'' = 1'-0''$

NOTES

— Indicates direction of span for concrete ribbed slab (metal fillers generally).
See architectural sections, details and schedules for floor toppings and finishes.

ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown.
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA.
For current design requirements, refer to design data, standard details, and approved space and project directives for each project.

SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED ARCHITECTURAL STRUCTURAL MECHANICAL ELECTRICAL

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDING SERVICE - WASHINGTON, D.C.

PROJECT U.S. POST OFFICE COURTHOUSE \$500,000

LOCATION CLAWSON, IOWA

STREET GREEN AVE. AND WHITE ST.

PROJ. NO. 00-000 FILE NO.

DRAWN BY MEH JUNE 1964 CHECKED BY J. Parker

TITLE ROOF FRAMING PLAN

TENTATIVE SKETCHES

DRAWING NO. 21-14



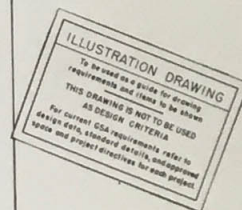
Based on Space Directive
Dated July 26, 1962

PLUMBING NOTES

1. Show other required equipment such as domestic water pumps, pneumatic tanks, etc.
2. 4.2.A Mechanical and Electrical Engineering Handbook calls for a central system for over 8 drinking fountains, however, for this building, where there would be extremely long pipe lines, the use of electric water coolers (EWC) is preferable.

PLUMBING FIXTURE SYMBOLS

- P-1 Water closets
- P-1A Water closets (tank type)
- P-2 Lavatories
- P-3 Urinals
- P-4 Shower-baths
- P-5 Map Service Basin
- P-6 Engineers sinks
- P-7 Drinking Fountains or Electric Water Coolers

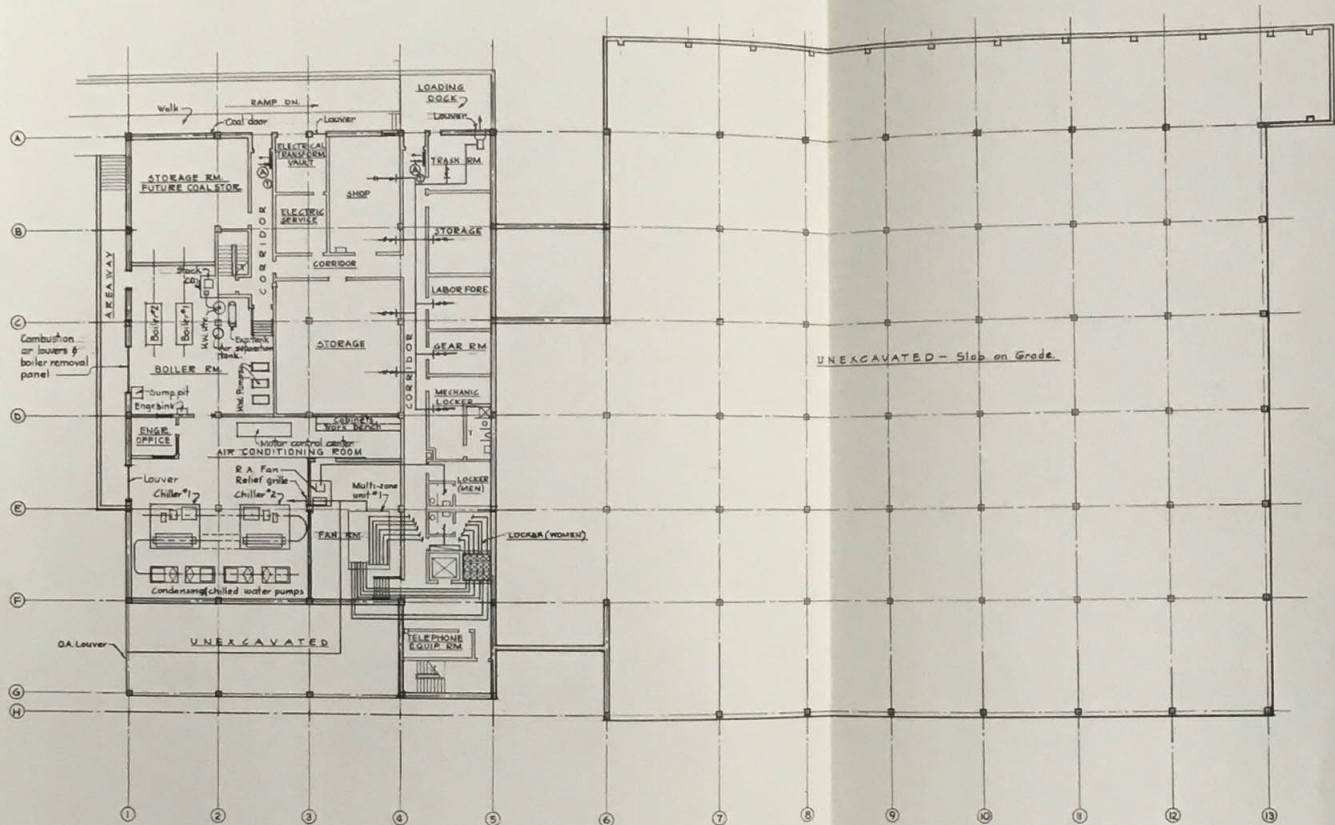


SMITH, BLANK AND SMITH ARCHITECTS

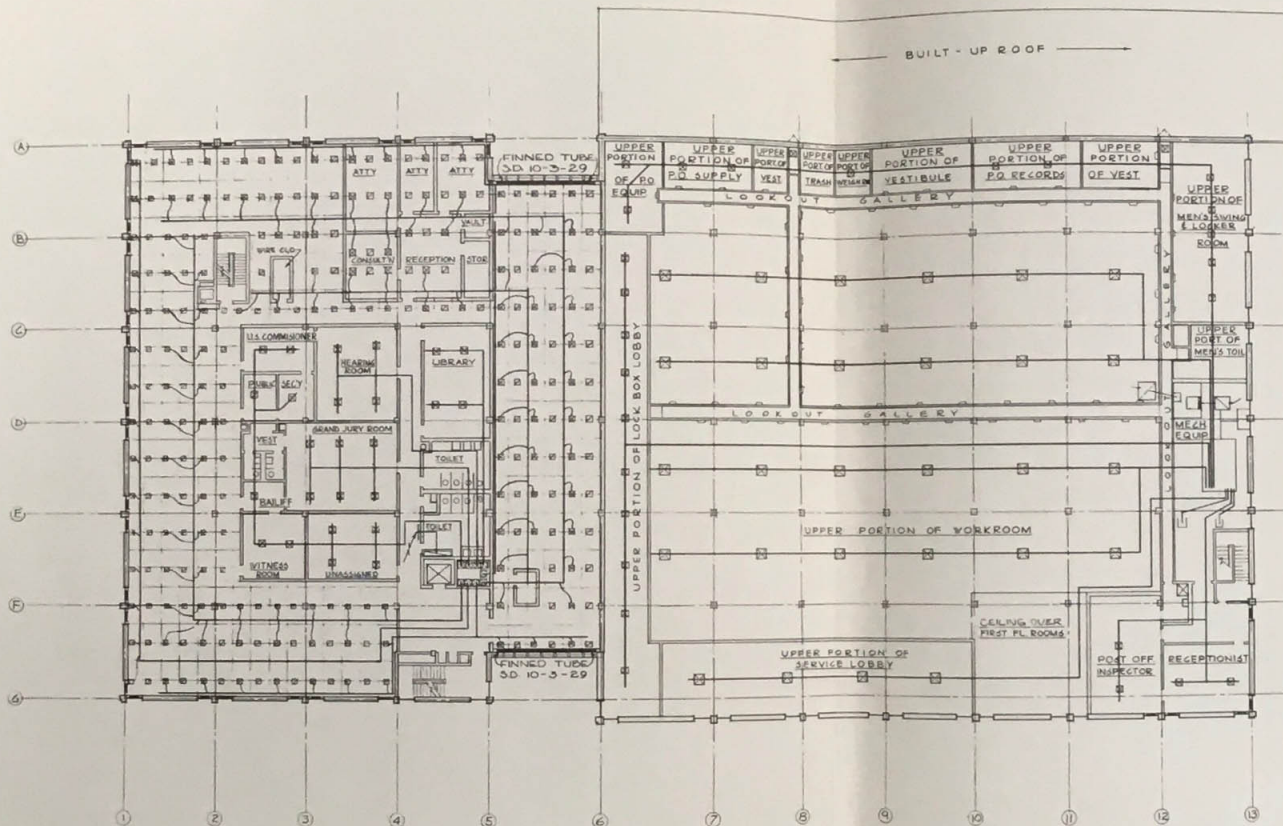
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	US POST OFFICE COURTHOUSE (200)			
LOCATION	CLARKSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	TR. NO.		
DRAWN BY	P.A.M.	DATE	2/26/62	CHECKED BY J. Parker
DRAWING TITLE	BASEMENT MECHANICAL PLAN			
	TENTATIVE SKETCHES			
DRAWING NO.	21-15			



Based on Space Directive
Dated July 26, 1962



BASEMENT FLOOR PLAN
SCALE
 $\frac{1}{16}'' = 1'-0''$



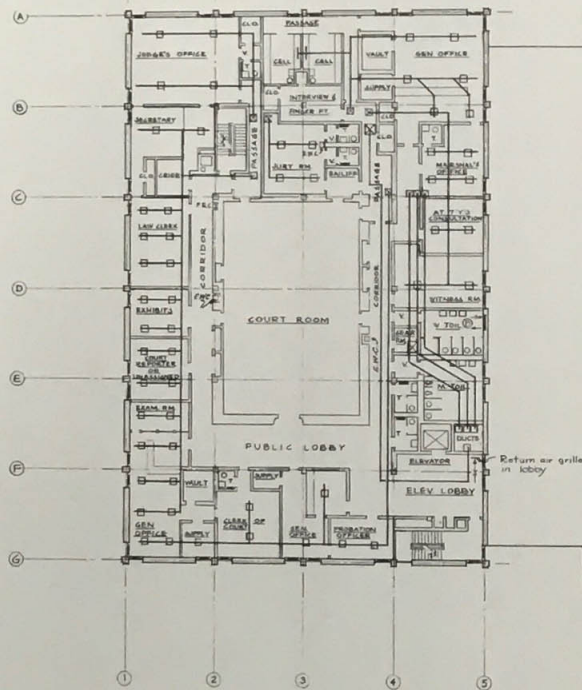
SECOND FLOOR PLAN
SCALE 1/16" = 1'-0"

ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA
For current GSA requirements, refer to design sets, standard details, and approved space and project directives for each project.

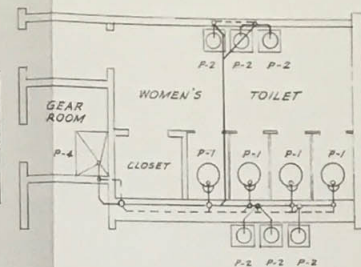
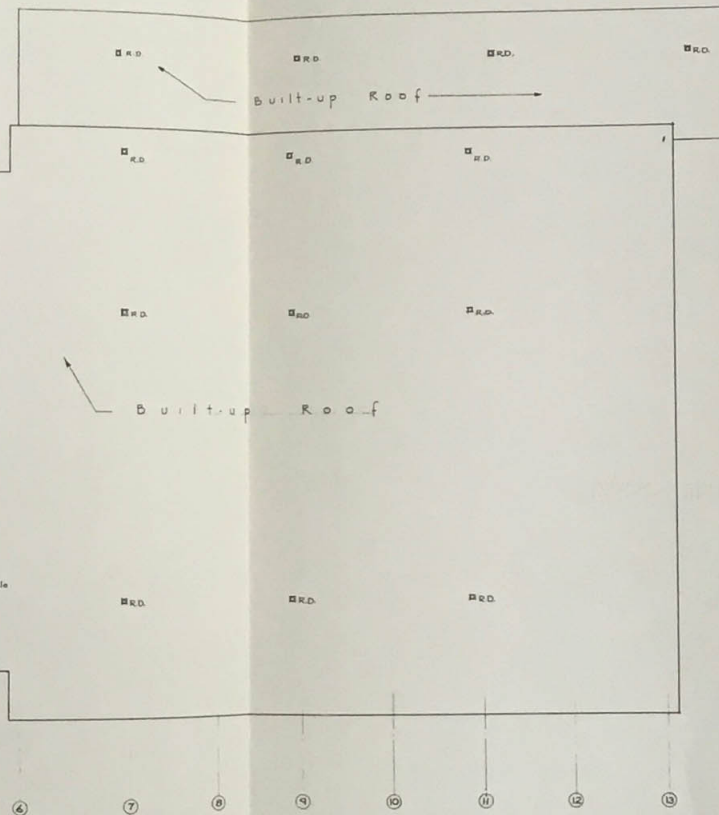
SMITH, BLANK AND SMITH ARCHITECTS		
APPROVED	ARCHITECTURAL	STRUCTURAL
		Mechanical Electrical
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.		
PROJECT	U.S. POST OFFICE, CLAWSON, IOWA	
LOCATION	CLAWSON, IOWA	
STREET	GREEN AVE. AND WHITE ST.	
PROJ. NO.	00-000	FILE NO.
DRAWN BY	DAM, LURE & CA. CHECKED BY J. R. R. R.	
DRAWING TITLE	SECOND FLOOR MECHANICAL PLAN	
	TENTATIVE SKETCHES	
DRAWING NO.	21-17	



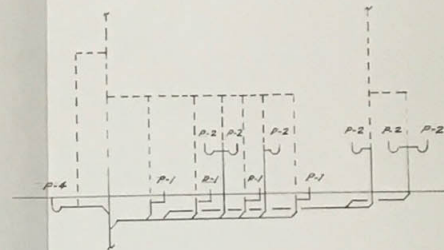
Based on Space Directive
Dated July 26, 1962



THIRD FLOOR PLAN
SCALE $\frac{1}{16}'' = 1'-0''$



TYPICAL TOILET PLAN
Scale $\frac{1}{4}'' = 1'-0''$

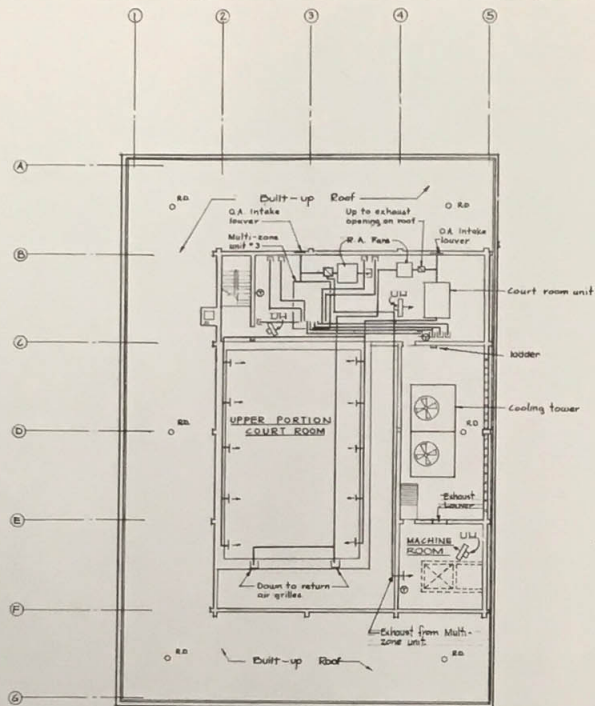


RISER DIAGRAM
Not to Scale

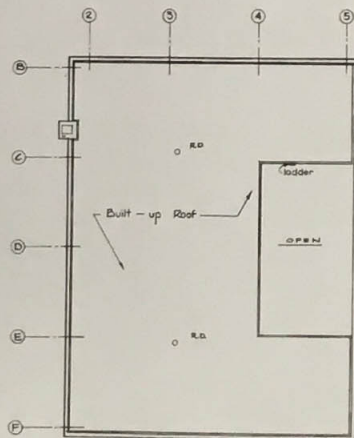
ILLUSTRATION DRAWING
To be used as a guide for drawing
Requirements and items to be shown
AS DESIGN CRITERIA
For current GSA requirements refer to
space and project directives for each project.

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDING SERVICE - WASHINGTON, D.C.			
PROJECT U.S. POST OFFICE COURTHOUSE			
LOCATION CLAWSON, IOWA			
STREET GREEN AVE. AND WHITE ST.			
PUBL. NO.	00-000	FILE NO.	
DRAWN BY	DAM	CHECKED BY	J. Parker
THIRD FLOOR MECHANICAL PLAN			
TENTATIVE SKETCHES			
DRAWING NO.	21-18		

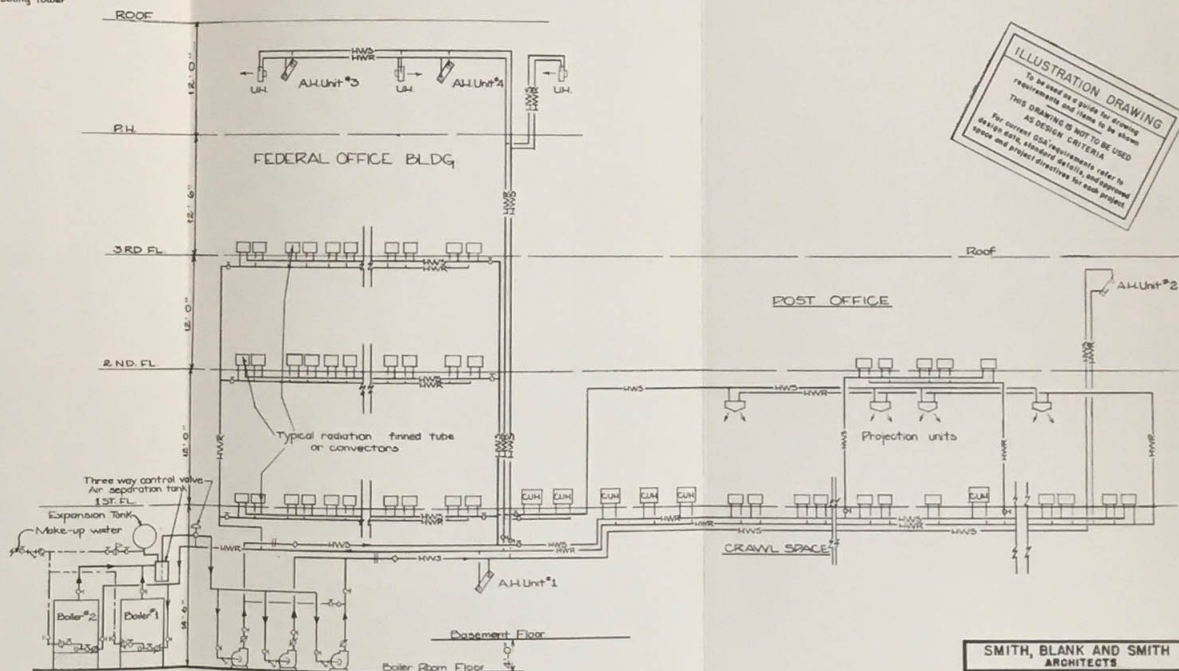
Based on Space Directive
Dated July 26, 1962.



PENTHOUSE PLAN
SCALE 1/16" = 1'-0"



PENTHOUSE ROOF PLAN
SCALE 1/16" = 1'-0"



HEATING FLOW DIAGRAM
NO SCALE

APPLICABLE	HEATING	STANDARD	DETAILS
100-1-1	100-1-1	100-1-1	100-1-1
100-1-2	100-1-2	100-1-2	100-1-2
100-1-3	100-1-3	100-1-3	100-1-3
100-1-4	100-1-4	100-1-4	100-1-4
100-1-5	100-1-5	100-1-5	100-1-5
100-1-6	100-1-6	100-1-6	100-1-6
100-1-7	100-1-7	100-1-7	100-1-7
100-1-8	100-1-8	100-1-8	100-1-8
100-1-9	100-1-9	100-1-9	100-1-9
100-1-10	100-1-10	100-1-10	100-1-10

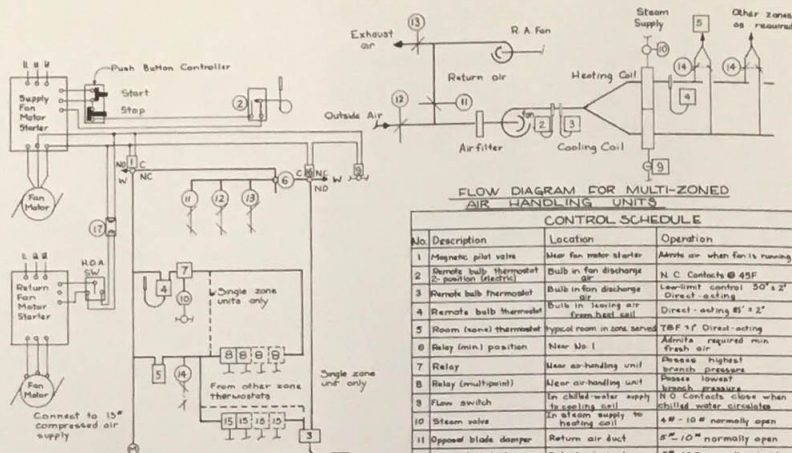
NOTE:

Install manual air vents at all high points of the H.W. System

Based on Space Directive
Dated July 26, 1962

ILLUSTRATION DRAWING
To be used as a guide for showing
requirements and items to be shown
THIS DRAWING IS NOT TO BE USED
AS DESIGN CRITERIA
For current code requirements refer to
design code, standard details, and approved
spec and project directives for each project

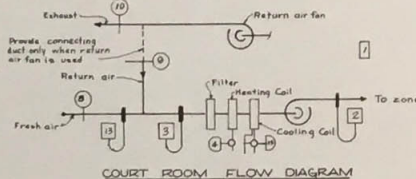
SMITH, BLANK AND SMITH ARCHITECTS		
APPROVED	ARCHITECTURAL	STRUCTURAL
	GENERAL SERVICES ADMINISTRATION	Mechanical
	PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.	
PROJECT	U.S. POST OFFICE COURTHOUSE	
LOCATION	CLAWSON, IOWA	
STREET	GREEN AVE AND WHITE ST.	
PROJ. NO.	00-000	FILE NO.
DRAWN BY	PAM	DATE 1-1-64 CHECKED BY J. Parker
DRAWING TITLE	PENTHOUSE MECH. PLAN & HEATING FLOW DIAGRAM	
	TENTATIVE SKETCHES	
DRAWING NO.	21-19	



CONTROL DIAGRAM FOR MULTI-ZONED AIR HANDLING UNITS

FLOW DIAGRAM FOR MULTI-ZONED AIR HANDLING UNITS

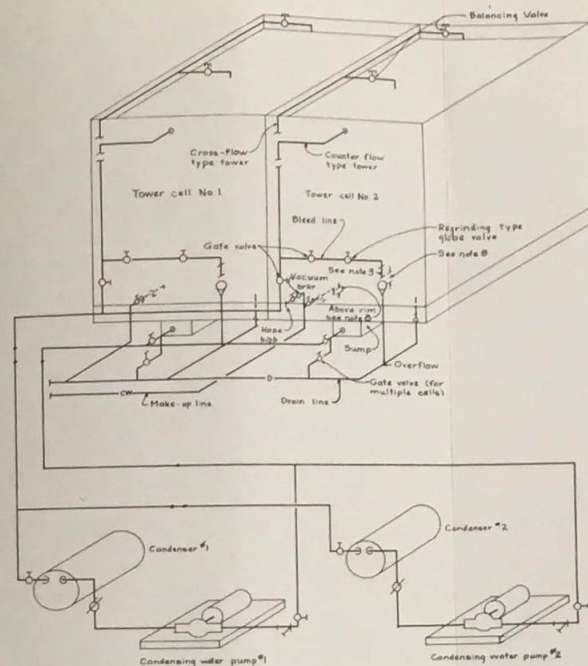
No.	Description	Location	Operation
1	Magnetic pilot valve	Near fan motor starter	Admits air when fan is running
2	Remote bulb thermostat (2 position)	Built in fan discharge	N.C. Contacts @ 45°F
3	Remote bulb thermostat	Built in fan discharge	Low-limit control 50° x 2"
4	Remote bulb thermostat	Built in heating air from heat coil	Direct-acting 85° x 2"
5	Room (wall) thermostat	Typical room in zone served	T&F 1/2" Direct-acting
6	Relay (mini) position	Near air-handling unit	Admits required min. fresh air
7	Relay	Near air-handling unit	Prevents highest branch pressures
8	Relay (multi-point)	Near air-handling unit	Prevents lowest branch pressures
9	Flow switch	In chilled water supply	N.O. Contacts close when chilled water circulates
10	Steam valve	In steam supply to heating coil	8" - 10" normally open
11	Opposed blade damper	Return air duct	8" - 10" normally open
12	Opposed blade damper	Outside air duct	8" - 10" normally closed
13	Opposed blade damper	Exhaust air relief opening	8" - 10" normally closed
14	Mixing damper	Leaving air plenums from heat, cool coils	8" - 10" LC to avoid air N.O. to admit air
15	Relay (multi-point)	Near air-handling unit	Prevents highest branch pressures
16	Magnetic pilot valve	Near air-handling unit	Waste air when energized by No. 8
17	Electric relay	Near air-handling unit	N.O. contacts



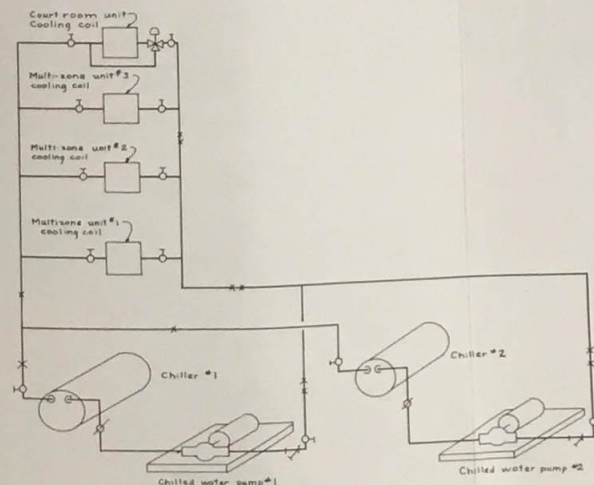
COURT ROOM FLOW DIAGRAM

No.	Description	Location	Operation
1	Room thermostat	Typical room	Reverses acting 70° x 1"
2	Sub-master thermostat	Fan Discharge	Direct-acting 70° x 1"
3	Remote bulb thermostat	Built in return air fresh air mixture	Low-limit control, direct-acting 35° x 1"
4	Steam valve	In steam supply to heating coil	Normally open 4" x 6"
5	Magnetic pilot valve	On panel board	Admits air when pump is running
6	Relay (mini position)	On panel board	Admits required min. fresh air
7	Magnetic pilot valve	" " "	Admits air when fan is running
8	Opposed blade damper	Fresh air duct	Normally closed 8" x 10"
9	" " "	Return air duct	" " open "
10	" " "	Exhaust air duct	" " closed "
11	Relay (two position)	On panel board	Open to control air flow to main air 8"
12	" " "	" " "	Open to control air flow to main air 8"
13	Remote bulb thermostat (three position)	Fresh air duct	Direct-acting 72° x 1"
14	Relay	On panel board	(Two position)
15	Water valve (3 Wpl)	In chilled water return from cool coil	Normally open 3" x 15"
16	Relay (2 position)	On panel board	Open to main air 8" Stop and waste 15"

COURT ROOM CONTROL DIAGRAM



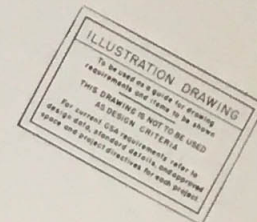
CONDENSING WATER FLOW DIAGRAM



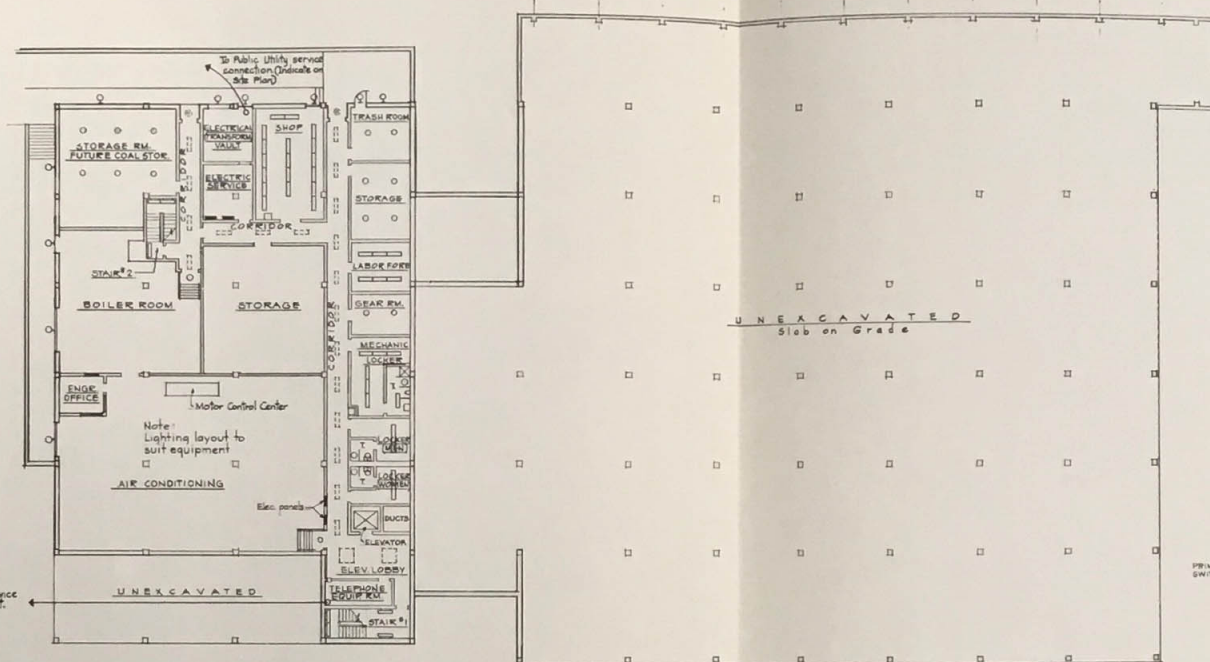
CHILLED WATER FLOW DIAGRAM

NOTES

1. Pump shall be identical for each cell except as noted.
2. Basin shall be subdivided for each cell.
3. Provide short length of hose with hose connection.
4. Install condenser water bypass valve at the top of supply & return mains inside of the building.
5. Provide stop waste valve inside the building in make-up water line.
6. Run drain line to roof drain or other drain leading to sewer. It shall not discharge on the roof or at grade.
7. Provide only one hose bibb and vacuum breaker.
8. Two inches or two pipe diameters whichever is greater.



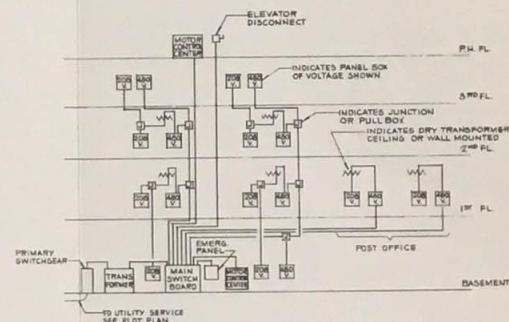
SMITH, BLANK AND SMITH ARCHITECTS		
APPROVED:	ARCHITECTURAL	STRUCTURAL
GENERAL SERVICES ADMINISTRATION	PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.	
PROJECT:	116 POST OFFICE BUILDING	
LOCATION:	CLAWSON, IOWA	
STREET:	GREEN AVE. AND WHITE ST.	
PROJ. NO.	00-000	FILE NO.
DRAWN BY:	D.A.M.	CHECKED BY: J. Parker
DRAWING TITLE:	MECHANICAL DETAILS	
DELIVERY NO.	21-20	



BASEMENT FLOOR PLAN
SCALE $\frac{1}{8}'' = 1'-0''$

ELECTRICAL NOTES:

1. Show location of public utility and telephone company manholes or poles on the site. Plan. Avoid running these services thru areas where future expansion of building may be anticipated.
2. Show location and size of Transformer and Switchboard Rooms for all large buildings and for small buildings if transformers within the building are required by the Utility Co. or are to be furnished by the Government.
3. In major multi-story buildings the Electrical and Telephone Cables shall be stacked from lowest to uppermost floors.



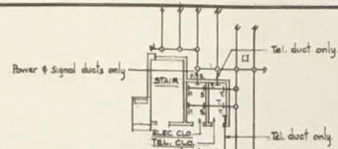
RISER DIAGRAM
(NOT TO SCALE)

NOTES

1. This diagram is for a specific building. It should be modified to suit your project conditions.
2. For major multi-story buildings this diagram should be on a separate sheet.
3. Indicate whether primary switchgear and transformer are provided by the Public Utility Co. If service comes into building at 480 or 208 Volts, omit the primary switch and transformer. Modify riser diagram if distribution is at 100/208 Volts.
4. Dry type transformers should not exceed 45 KVA if used in the office or post office sections.
5. Provide headbox heaters as required by Post Office Dept.
6. Indicate Telephone service entrance on dwgs.



SMITH, BLANK AND SMITH ARCHITECTS		
APPROVED	ARCHITECTURAL	STRUCTURAL
		MECHANICAL
		ELECTRICAL
GENERAL SERVICES ADMINISTRATION		
PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.		
PROJECT	U.S. POST OFFICE, CLAWSON, IOWA	
LOCATION	CLAWSON, IOWA	
STREET	GREEN AVE. AND WHITE ST.	
PROJ. NO.	00-000	FILE NO.
DRAWN BY	McClain	CHECKED BY J. Parker
DRAWING TITLE	BASEMENT FLOOR ELECTRICAL PLAN	
	TENTATIVE SKETCHES	
DRAWING NO.	21-21	



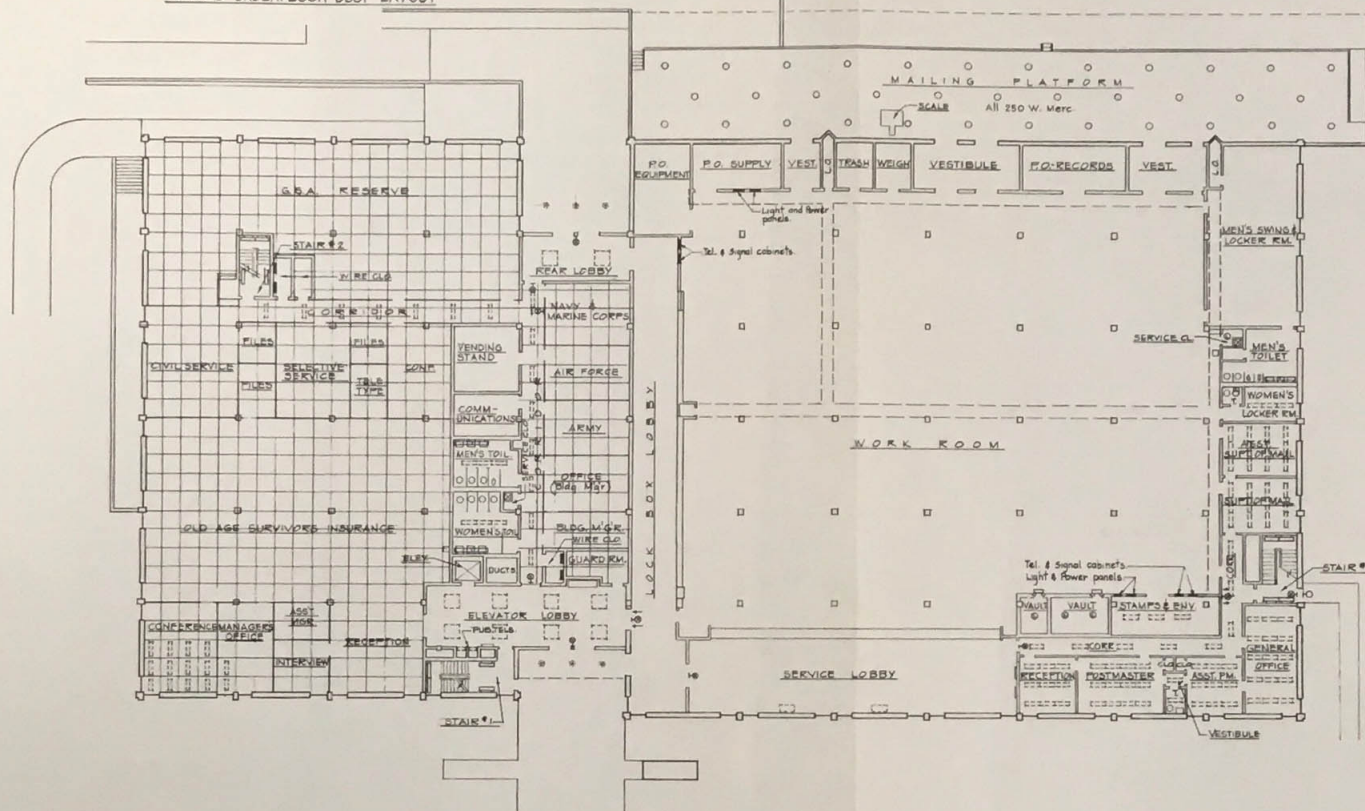
TYPICAL UNDERFLOOR DUCT LAYOUT

NOTES: (APPLY TO ALL U.F. DUCT LAYOUTS OR CELLULAR FLOOR LAYOUTS)

- 1- On major multi-story buildings where the floor plans are repetitive, a typical floor plan for an entire floor should be submitted.
- 2- On the above buildings combination Electric and Telephone Closets are not permissible.

LEGEND: (FOR UNDERFLOOR DUCTS)

- Three service underfloor duct with junction box.
- Shows termination of three services or individual services indicated:
T-Telephone
P-Power
S-Signal



FIRST FLOOR PLAN
SCALE 1/8" = 1'-0"

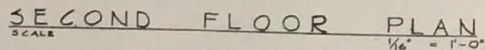
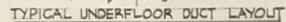
NOTES:

1. Flush type panels and cabinets may be used in Post Office Work Space.

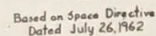
ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown
THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA
For current GSA requirements refer to design data, standard details, and approval space and project directives for each project

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT	U.S. POST OFFICE TO JEFFERSON & 2ND ST.		
LOCATION	CLAWSON, IOWA		
STREET	GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	McClint, June 9, 64 CHECKED BY J. Parker		
DRAWING TITLE	FIRST FLOOR ELECTRICAL PLAN		
DRAWING NO.	TENTATIVE SKETCHES		
	21-22		

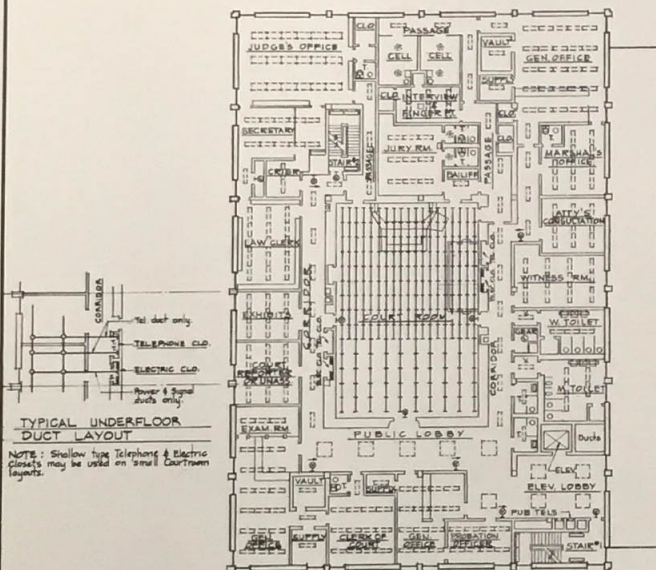
Based on Space Directive
Dated July 26, 1962



APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	TIAPOST OFFICE COURTHOUSE & R.O.B.			
LOCATION	CLAWSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PSAL NO.	00-0000		FILE NO.	
DRAWN BY	Mc Cain		CHECKED BY	J. Parker
DRAWING TITLE	SECOND FLOOR ELECTRICAL PLAN			
	TENTATIVE SKETCHES			
DRAWING NO.	21-23			

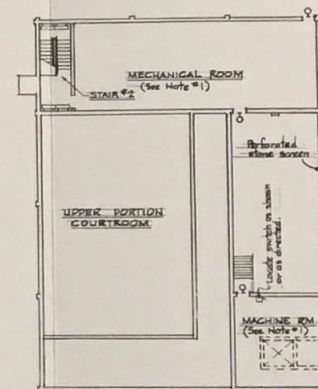


GENERAL NOTES
 1. Layout of lighting fixtures to suit equipment location.



THIRD FLOOR PLAN
 SCALE 1/16" = 1'-0"

ROOF OVER POST OFFICE



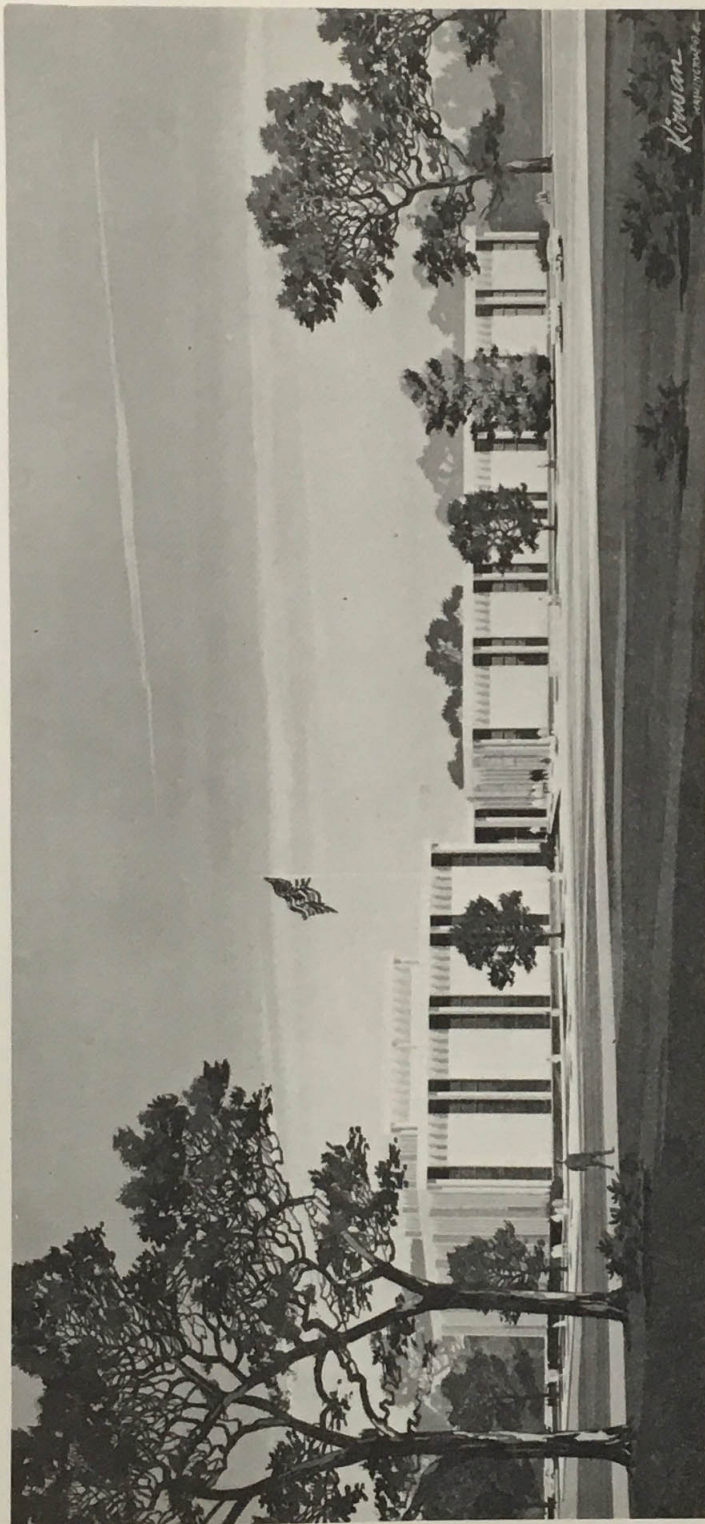
PENTHOUSE PLAN
 SCALE 1/16" = 1'-0"

ILLUSTRATION DRAWING
 To be used as a guide for drawing requirements and plans to be shown
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 AS DESIGN CRITERIA
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SMITH, BLANK AND SMITH
 ARCHITECTS

APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL	ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.				
PROJECT	U.S. POST OFFICE, COURTHOUSE & F.O.B.			
LOCATION	CLAWSON, IOWA			
STREET	GREEN AVE. AND WHITE ST.			
PROJ. NO.	00-000	FILE NO.		
DRAWN BY	McClain, June 5, 64		CHECKED BY J. Parker	
DRAWING TITLE	THIRD FLOOR & PENTHOUSE ELECTRICAL PLAN TENTATIVE SKETCHES			
DRAWING NO.	21-24			

Based on Space Directive
 Dated July 26, 1962



UNITED STATES POST OFFICE , COURT HOUSE & F.O.B., CLAWSON, IOWA
SMITH, BLANK, AND SMITH

GENERAL SERVICES ADMINISTRATION
WASHINGTON, D. C.

Appendix C. Rendered Perspective
(Part 26 of 26)

APPENDIX D.
SAMPLE COVER SHEET,
TOPO. SURVEY, AND
SCHEDULES

<u>Drawing No.</u>	<u>Title</u>
0-1	Cover Sheet
1-1	Topographic Survey
1-2	Boring Log
5-1	Schedules
5-2	Schedules

Appendix D. Sample Cover Sheet, Property Line and
(Part 1 of 6) Topographic Survey, and Schedules

ARCHITECTURAL

DRAWING NO.	TITLE
0-1	COVER SHEET
1-1	TOPOGRAPHICAL SURVEY
1-2	BORING LOG
2-1	SITE PLAN
2-2	DEMOLITION PLAN
3-1	BASEMENT FLOOR PLAN
3-2	FIRST FLOOR PLAN - OFFICES
3-3	SECOND FLOOR PLAN - OFFICES
3-4	THIRD FLOOR PLAN - OFFICES & COURT ROOM
3-5	FIRST FLOOR PLAN - POST OFFICE
3-6	RAMP - OFFICE AND MAILING PLATFORM, P.O.
3-7	SECOND FLOOR PLAN - POST OFFICE
3-8	ROOF PLAN
4-1	LONGITUDINAL SECTION
4-2	TRANSVERSE SECTION
4-3	ELEVATIONS
5-1	SCHEDULES
5-2	LOCK BOX AND SERVICE COUNTER DETAILS
5-3	WALL SECTIONS
5-4	WALL SECTIONS
5-5	WALL SECTIONS - CAST STONE
5-6	WALL SECTIONS - WINDOWS
5-7	FULL SIZE WINDOW DETAILS
5-8	ENTRANCE LOBBY DETAILS
5-9	TOILET ROOM PLANS & DETAILS
5-10	ELEVATOR LOBBY DETAILS
5-11	ELEVATOR LOBBY ELEVATIONS
5-12	ELEVATOR SHAFT DETAIL
5-13	COURT ROOM DETAILS
5-14	COURT ROOM DETAILS
5-15	JUDGE'S SUITE DETAILS
5-16	STAIR DETAILS
5-17	SPECIAL DOORS
5-18	MISCELLANEOUS DETAILS & COLOR SCHEDULES
17-1	PLANTING PLAN

STANDARD DETAILS

ject, the Contractor shall modify the Standard Detail to the extent explained below.

	MECHANICAL			
	HEAT & AIR COND.	PLUMBING	ELECTRICAL	MISC.
	10-1-1A	10-2-3	6-18-3B	10-7-1 (Mod)
	10-1-2A		6-18-4A	
	10-1-3A		10-4-1A	
	10-1-5B			
	10-3-1D		10-4-15A	
	10-3-5C		10-4-16A	
	10-3-14			
	10-3-17A			
	10-3-18		10-8-7	
(Mod)	10-3-20		10-8-8A	
C (Mod)	10-3-21		10-8-1C	
B (Mod)	10-3-23			
	10-3-29			
	10-6-1			
	10-6-2B		10-8-23B	
	10-6-3B		10-8-25H	
	10-6-4B		10-8-30	
	10-6-6A		10-8-31	
	10-6-7			
			10-8-36	
			10-8-37A	
			10-8-35C	

MODIFICATIONS TO BE MADE BY CONTRACTOR

6-16-23A (MOD)	TERRAZZO BASE IN LIEU OF VINYL BASE
6-3-1G (Mod)	BASE VARIES FROM STANDARD DETAIL (SEE DETAIL DRAWING NO. 5-18)
6-11-7B (1) (Mod)	CHANGE 6" DIMENSION FROM CENTER LINE OF RUNG TO WALL TO 4" IN ELEVATOR PITS ONLY.
6-24-7C (Mod)	
6-24-20C (Mod)	FOR MODIFICATIONS SEE DETAILS
6-24-21B (Mod)	DRAWING NO. 5-13.
10-7-1 (Mod)	MODIFIED TO FIT SCALE

ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown AS DESIGN CRITERIA
For current GSA requirements refer to design data, standard details, and approved space and project directives for each project.

PREPARED UNDER THE DIRECTION OF
BERNARD L. BOUTIN
ADMINISTRATOR

APPROVED

ASST. COMMISSIONER FOR DESIGN AND CONSTRUCTION

DATE

SMITH, BLANK AND SMITH
ARCHITECTS

APPROVED

DIRECTOR OF DESIGN DIVISION

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

PROJECT U.S. POST OFFICE, COURT HOUSE & P.O.

LOCATION CLAWSON, IOWA

STREET GREEN AVE. AND WHITE ST.

PROJ. NO. 00-000

FILE NO.

DRAWN BY A. Bregida

CHECKED BY J. Parker

DRAWING TITLE COVER SHEET

DRAWING NO.

0-1



GENERATION
Public 25, D. C.

INDEX OF DRAWINGS

[illegible]

GENERAL SERVICES ADMINISTRATION

Public Buildings Service Washington 25, D. C.

PARCEL	OWNER	AREA (Acres)
1.	Gertrude Hein	0.455
2.	Robert McClain	0.280
3.	J.J. Dukerson	0.170
4.	Irene Richardson	0.245
5.	J. Morrissey & Co.	0.194
6.	Richard Tuley	0.778
7.	Joe Shields	0.870
8.	Louis & Maclen	0.174
9.	L. L. Ham	0.174
Total Area		3.490

C.D.	Concrete Drive
C.W.	Concrete Walk
W.M.	Water Main
L.P.	Light Pole
T.P.	Transformer Pole
P.T.	Power & Telephone Pole
T.	Tree
S.S.L.	Sanitary Sewer Line & Manhole
S.D.L.	Storm Drainage Line & Manhole
W.M.	Water Main
P.L.	Property Line
G.L.	Gas Line
D.O.T.	Buried Oil Tank

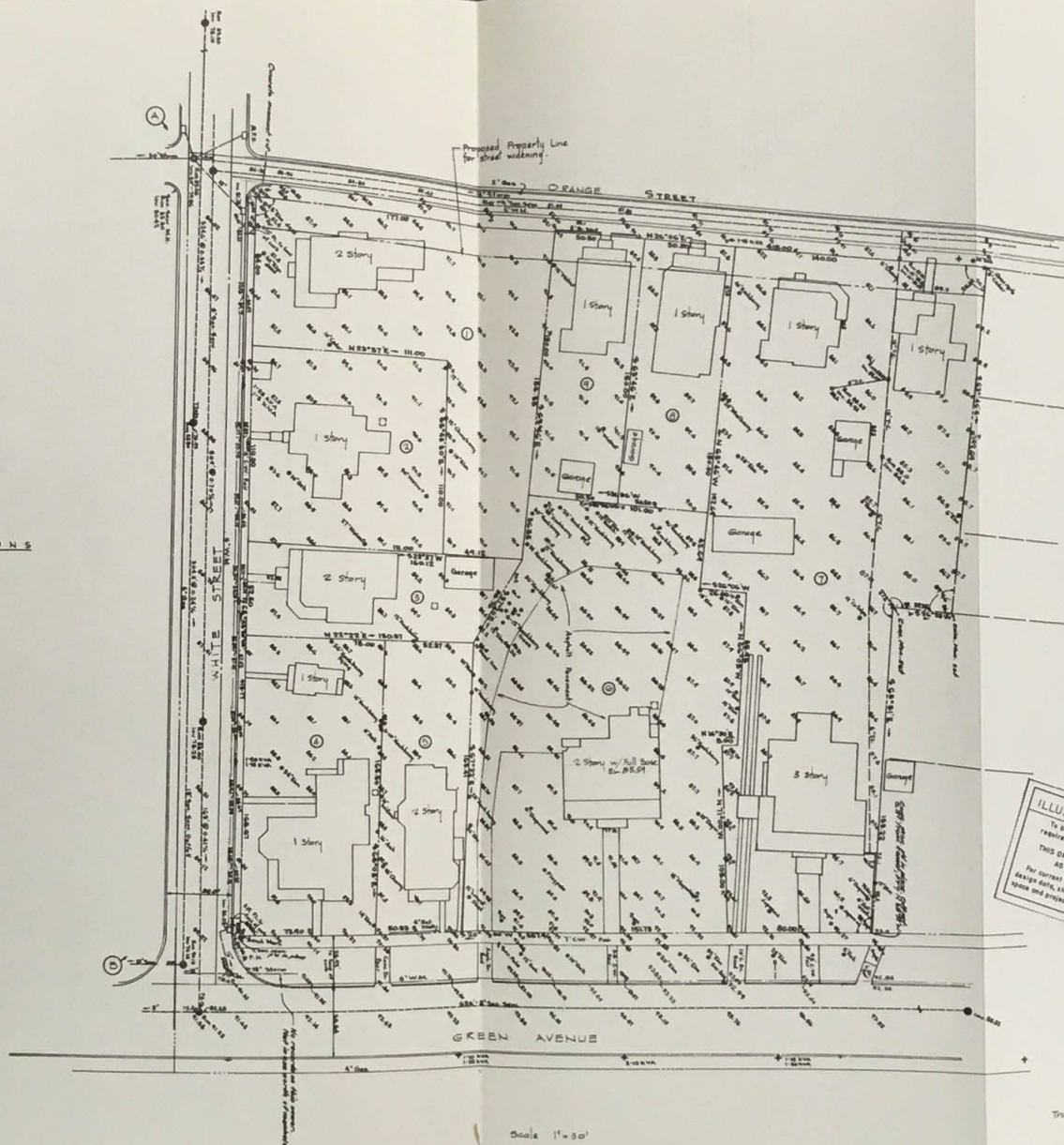
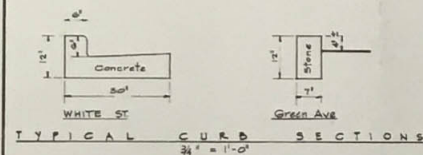


ILLUSTRATION DRAWING

To be used as a guide for dimensions and requirements and those to be shown.

THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA.

For current CDA requirements refer to design data, standard details, and general notes and project directives for each project.

A. R. Brown & Co. Surveyors

- GENERAL NOTES:**
- All buildings within boundary are wood frame construction.
 - Streets and Curb:
 - a. White Street: Curb - 30" Concrete - Good; Pavement - Asphalt - Poor
 - b. Green Ave: Curb - 7" Stone - Poor; Pavement - Asphalt - Poor
 - c. Union Street: Curb - None; Sidewalk - None; Pavement - Asphalt - Poor
 - Property lines on White St. and Green Ave. are along the back edge of sidewalk.
 - Dench mark is the southeast corner of the site at the intersection of the back edge of the sidewalk (Elev. 94.00).
 - There are no encroachments on or from the site.
 - Building setback lines (from street margin):
 - Green Ave. - 30.00'
 - White Street - 35.00' front yard & 15' if 4-way
 - Orange Street - 30.00' from existing pavt.
 - There are no party walls.
 - There are no street car or railroad tracks nearby.
 - There are no parking meters.
 - Left hand circle indicates camera location & direction.
 - 50 Copper pins in monuments are set for the exact corner location except for the one at the northeast corner of the site. The pin in the monument at the northeast corner is N 68° 51' W, 0.5' from the corner (in the north line).

- UTILITY NOTES:**
- Power line on north side of White St. & east side of Green St. is 397200/1000 WYE. Orange St. line is Single Phase 7200 volts.
 - Power lines, sewer lines, and water lines are owned by Public Works Com.
 - Telephone lines are on the same poles as the power lines and are owned by City Telephone & Telegraph Co.
 - Gas line size and pressure: (natural gas)
 - Orange St. - 12" - 10" w/c pressure
 - White St. - 4" - 10" - "
 - Green Ave. - 4" - 85 p.s.i.
 - Gas lines are owned by City Gas Co.
 - Water pressure is 50 p.s.i. - 65 p.s.i.
 - Storm drainage & sanitary sewer structures are covered over in Green Ave. & Orange St. & structure information is not available.

I hereby certify that the drawing correctly shows the boundaries of the property described above & that streets, alleys, sidewalks, curbs, encroachments & surface & subsurface utilities are properly & correctly indicated.

A. R. Brown & Co. Surveyors

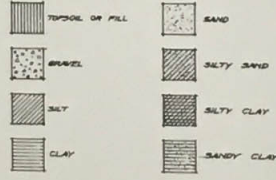
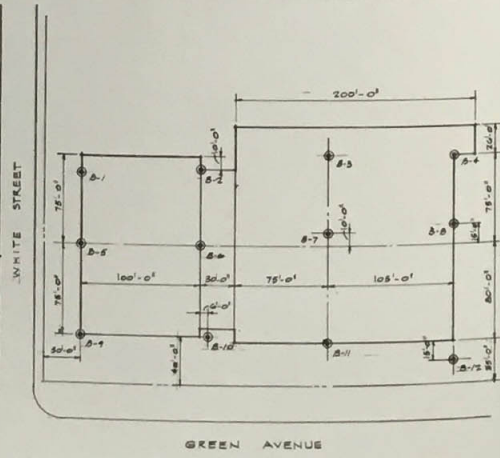
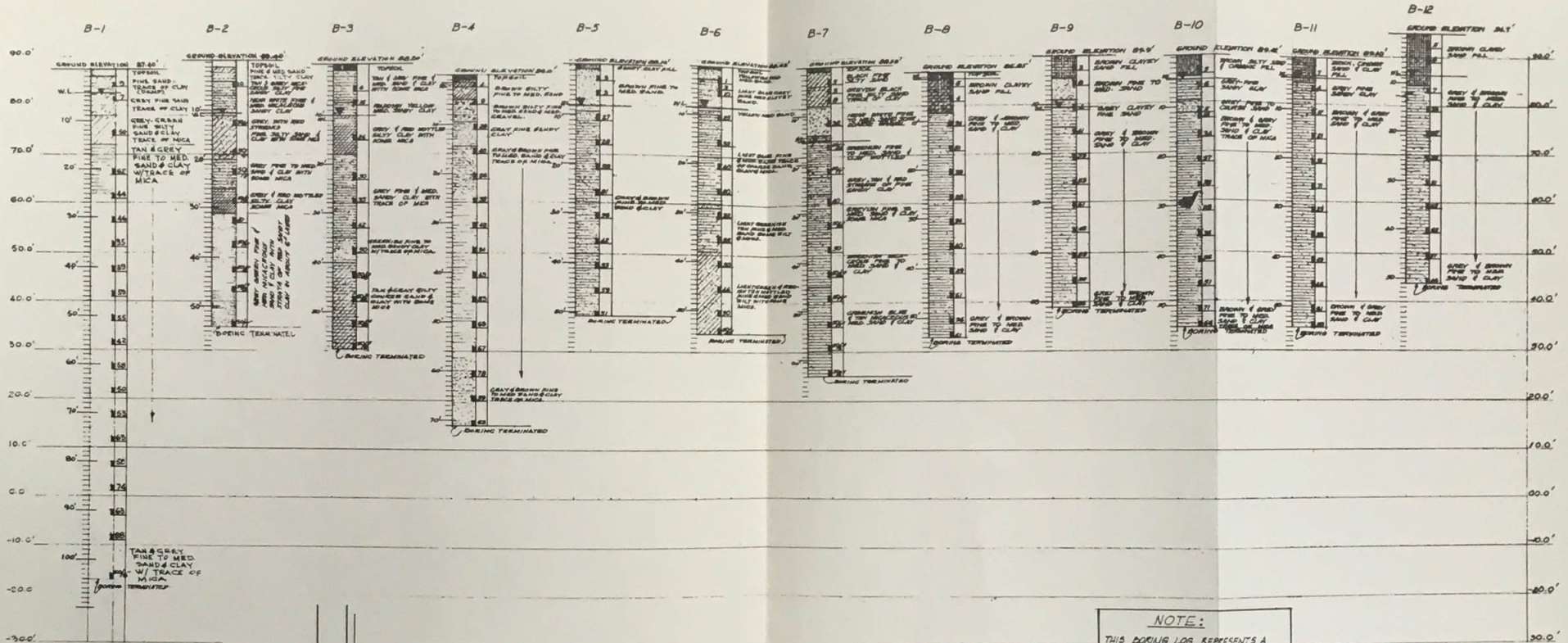
I hereby certify that the drawing correctly shows lot numbers, names & locations of streets & alleys, established building lines, width & established elevations of streets & sidewalks, locations & elevations of sewers & other utilities.

A. R. Brown & Co. Surveyors

A. R. BROWN & CO.		
SURVEYORS		
APPROVED	ARCHITECTURAL	ENGINEERING
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE, WASHINGTON, D.C.		
PROJECT: POST OFFICE COURTHOUSE #10		
LOCATION: CLAWSON, IOWA		
STREET: GREEN AVE. AND WHITE ST.		
PROJ. NO.	00-000	FILE NO.
DRAWN BY: S. Tracy		
DRAWING TITLE: TOPOGRAPHIC SURVEY		
ARCHITECTURAL		
DRAWING NO. 1-1		

LOG OF BORINGS

HORIZONTAL SCALE ONLY 1"=10'-0"



NOTE:
THIS BORING LOG REPRESENTS A MANNER OF DATA DISPLAY AND IT SHALL NOT BE INTERPRETED AS BEING APPLICABLE TO THE TYPE AND ARRANGEMENT OF FOOTINGS SHOWN ON THE FOUNDATION PLAN (DWG. NO. 12-10)

2 INDICATES NUMBER OF BLOW OF A 140 LB. WEIGHT FALLING 30 INCHES REQUIRED TO DRIVE SAMPLE ONE FOOT.

1 SAMPLE TAKEN AT THIS LEVEL

W.L. INDICATES GROUND WATER LEVEL

ILLUSTRATION DRAWING
To be used as a guide for drawing requirements and items to be shown AS DESIGN CRITERIA
For current GSA requirements refer to design data, standard details, and approved forms and project directives for each project.

SMITH, BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL/ELECTRICAL
GENERAL SERVICES ADMINISTRATION FIELD BUILDING DIVISION - WASHINGTON, D. C.			
PROJECT: U.S. POST OFFICE COURTHOUSE & J.D.A.			
LOCATION: LAWSON, IOWA			
STREET: GREEN AVE. AND WHITE ST.			
PANEL NO. 00-000		FILE NO.	
DESIGNED BY: J. B. Smith, J. L. Smith		CHECKED BY: J. B. Smith	
DRAWING TITLE: BORING LOG			
ARCHITECTURAL			
SHEET NO. 1-2			

INTERIOR FINISH SCHEDULE

[illegible]

ILLUSTRATION DRAWING

To be used as a guide for drawing requirements and items to be shown

THIS DRAWING IS NOT TO BE USED AS DESIGN CRITERIA

For current CSA requirements refer to design data, standards, eligibility, and approved space and project directives for each project

[illegible]

USERS	Term: 17	Concrete X	MARBLE	8	TILE (CERAMIC) WALLS OR DIE	20	ALUMINUM (EXTRUSIONS)	EXTERIOR GLASS	RND: Movable metal	EXHIBIT CASE FOR HISTORIC DOCUMENTS -
PLATFORM BASE	Term: 17	Concrete X	NAME: White George Blue Van		TYPE II CLASS: G		ITEMS: All exterior aluminum not otherwise scheduled	LOCATION: Entrance doors & sidelights	ALTERNATE: Demountable panel type.	See S.D. 6-19-B
PLATFORM FIELD	Term: 17	Concrete X	or Sunset Blue		GLAZE: Bright COLOR: Medium gray			All windows except as noted below	CORRIDOR PARTITIONS: 450 Lx 1-P.	THE GREAT SEAL OF THE UNITED STATES
PLATFORM BORDER			FINISH: Polished		PATTERN: Continuous joints, SIZE: 4 1/2" x 4 1/2"		FINISH: NA-4-CBIA COLOR: Natural	TYPE: Polished plate glass, Type I, heavy plate, glazing quality	HEIGHT: 9'-0"	(Aluminum plaques, reverse and reverse sides, S.D. 6-22-B)
WALL STRINGER	Term base: 17	Concrete X	PLASTER	9	METHOD OF SETTING: Organic adhesives		ALUMINUM (EXTRUSIONS)	LOCATION: Toilet Room & Swing Room windows	INTER-OFFICE PARTITIONS: 100 Lx 1-P.	ELECTRIC LAMPS
WELL STRINGER	Concrete X	Concrete X	KIND: Lime or Gypsum		TILE (CERAMIC) CAP	21	ITEMS: Full at entrance steps.	TYPE: Rolled glass, Type III, figured unpolished glazing quality	TYPE OF DOORS: Type "A" S.D. 6-18-1.	
FACIAS	Concrete X	Concrete X	FINISH: Smooth white		TYPE: III CLASS: M		FINISH: NA-4-CBIA COLOR: Natural	PATTERN: Class II - Shallow indented design	MATERIAL or DOORS: Hollow metal for movable metal	
NEWELS			PLASTER	10	GLAZE: Bright COLOR: Medium gray		ALUMINUM (CAST)	DOORS: Spandrel panels	WOOD for demountable panel type.	
WALL HANDRAIL	Aluminum S	Aluminum S	KIND: KRENE CEMENT		SHAPE: Bullnose, 4 1/2" x 4 1/2"		ITEMS: TIE: LETTERS	TYPE: Heat strengthened glass, polished plate, colored enamel fixed on glass surface	GRANDOR DOORS: 24	
WELL HANDRAIL	Aluminum S	Aluminum S	FINISH: Smooth hard white		METHOD OF SETTING: Organic adhesives		FINISH: NA-CE-2A COLOR: Natural	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 51	
BALLISTERS	Aluminum S	Aluminum S	STEEL	11	VINYL ASBESTOS TILES - FLOOR FIELD	22	ARCHITECTURAL CAST STONE	TYPE: 2'-0" x 7'-0" x 1/2"	NUMBER REQUIRED: 24	
BOFFETS	Concrete X	Concrete X	FINISH: No. 4		SIZES: 9" x 9" THICKNESS: 1/8"		FINISH: Exposed aggregate	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 24	
WATER CLOSET	Steel 12	Steel 12	STEEL	12	COLOR: White with black marbling		COLOR: White with black marbling	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 24	
WATER CLOSET DOORS	Steel 12	Steel 12	FINISH: Dark enamel		PATTERN: Continuous joints		No 500 Squared Brown	TYPE: 2'-0" x 7'-0" x 1/2"	NUMBER REQUIRED: 24	
URINAL	Steel 12	Steel 12	STEEL	13	EDGING STRIP: Aluminum		BRICK (FACING)	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 24	
SHOWER	Steel 12	Steel 12	FINISH: Paint		VINYL PLASTIC BASE	23	TEXTURE: S.D. 6-5-64, Fine	TYPE: 2'-0" x 7'-0" x 1/2"	NUMBER REQUIRED: 24	
SHOWER DOORS			STRUCTURAL CLAY FACING TILE	14	BASE TYPE: Set-on HEIGHT: 4"		COLOR: Light gray	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 24	
SHOWER FLOORS			KIND: Clear glass		COLOR: Bleach		ACTUAL SIZE: 2 1/2" x 5 1/2" x 3/8"	TYPE: 2'-0" x 7'-0" x 1/2"	NUMBER REQUIRED: 24	
SCREEN PARTITION	Steel 12	Steel 12	WOOD (NATURAL FINISH)	24	RND: Burning		RND: Burning, S.D. 6-5-1	LOCATION: Basement windows, High main clear sheet, Type II, Heavy sheet X	NUMBER REQUIRED: 24	

SCREEN PARTITION DOORS		BASE SHAPE: Cove	KIND: Black velvet	JOINT PROFILE: Grommet & grommet	INTERIOR GLASS	NUMBER OF CLOCK OUTLETS: 28	ITEMS FURNISHED & INSTALLED BY THE GOVERNMENT:
NOTES	INTERIOR MATERIALS	NOMINAL FACE DIM. & SECTIONS: 6mm x 40-5/16"	GRAIN (SOLID SECTIONS): Plain painted	JOINT PROFILES: Concores, 6D & S-L	LOCATION: Doors & Sectionals in Lockers	TOTAL AREA OF BLAZING: None.	

X indicates materials governed by specifications (not scheduled on this drawing)		For Items of Steel, W.I., or C.I. not scheduled see specifications.		'Exposed' indicates exposed construction with no applied finish other than paint.		In case of differences between the finish schedules and other drawings, the finish schedule shall govern.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
ACOUSTICAL (Prefabricated Units)		1	ACOUSTICAL (Prefabricated Units)	15	TERRAZZO (PRECAST)	17	TILE (CERAMIC) FLOORS	18	TILE (CERAMIC) M	19	TERRAZZO	20	STEEL (PAINTED)	21	STEEL LINED VAULTS IN GENERAL OFFICE SPACE	22	VENETIAN BLINDS	23	WHERE REQUIRED: All rooms except in Basement, Toilet Rooms, Stairs, Men's Waiting & Locker Room & Pantryhouse.	24	BLAT MATERIAL: Aluminum - Single one.	25	BLAT COLOR: Light gray - Eggshell, baked enamel.	26	TAPE COLOR: Same color as blats.																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																								
DESCRIPTION: Pressured Mineral Fiber Tile		SPACES: Interior & Exterior		TREATMENT: Noise Reduction		FLAME SPREAD: 0 to 25		GRADE: 12 COR: .65		SIZE: 12"x12"		COLOR: Factory Finish White		INSTALLATION: Applied w/Adhesive to Plaster		ACOUSTICAL (Prefabricated Units)		2	ACOUSTICAL (Prefabricated Units)	3	BRICK (FACE)	4	BRICK (FACE)	5	BRICK (FACE)	6	BRICK (FACE)	7	BRICK (FACE)	8	BRICK (FACE)	9	BRICK (FACE)	10	BRICK (FACE)	11	BRICK (FACE)	12	BRICK (FACE)	13	BRICK (FACE)	14	BRICK (FACE)	15	BRICK (FACE)	16	BRICK (FACE)	17	BRICK (FACE)	18	BRICK (FACE)	19	BRICK (FACE)	20	BRICK (FACE)	21	BRICK (FACE)	22	BRICK (FACE)	23	BRICK (FACE)	24	BRICK (FACE)	25	BRICK (FACE)	26	BRICK (FACE)	27	BRICK (FACE)	28	BRICK (FACE)	29	BRICK (FACE)	30	BRICK (FACE)	31	BRICK (FACE)	32	BRICK (FACE)	33	BRICK (FACE)	34	BRICK (FACE)	35	BRICK (FACE)	36	BRICK (FACE)	37	BRICK (FACE)	38	BRICK (FACE)	39	BRICK (FACE)	40	BRICK (FACE)	41	BRICK (FACE)	42	BRICK (FACE)	43	BRICK (FACE)	44	BRICK (FACE)	45	BRICK (FACE)	46	BRICK 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(FACE)	689	BRICK (FACE)	690	BRICK (FACE)	691	BRICK (FACE)	692	BRICK (FACE)	693	BRICK (FACE)	694	BRICK (FACE)	695	BRICK (FACE)	696	BRICK (FACE)	697	BRICK (FACE)	698	BRICK (FACE)	699	BRICK (FACE)	700	BRICK (FACE)	701	BRICK (FACE)	702	BRICK (FACE)	703	BRICK (FACE)	704	BRICK (FACE)	705	BRICK

INTERIOR PAINT AND COLOR SCHEDULE

STANDARD COLOR SCHEMES

SPACE NAME AND NO.	Color scheme See S.D. 6-80-1	MODIFICATIONS
ASST. POSTMASTER'S ROOM	7	
BOILER ROOM	8	Painted-on wainscot, 4'-0" high
CELLS AND PASSENGERS	1	
CORRIDORS 6-20	1	Painted-on base, 5 1/2" high
CORRIDORS 110-205-224	3	
CORRIDORS 205-313-405-417	2	
ELEVATOR LOBBY (Basement)	5	
ELEVATOR LOBBY 200	3	
ELEVATOR LOBBY 300-400	4	
ELEV. SHAFT AND MACHINE ROOM	8	
FILE ROOM	1	
FUEL ROOM	8	Doors and trim only
GRAND JURY ROOM	2	
JURY ROOMS	2	
LOCKER ROOMS	3	
LOOKOUT GALLERY	BLACK	
LIBRARY	1A	Bookshelves, natural finished oak
MACHINE ROOM 18	8	Painted-on base, 5 1/2" high
MAILING VESTIBULE	9A	
OFFICES 2ND FLOOR	1	
OFFICES 3RD FLOOR	1	
OFFICES 4TH FLOOR	1	
PENTHOUSE	8	
POSTMASTER'S OFFICE	7	
SERVICE CLOSETS & GEAR ROOMS	3	Paint doors, trim, and ceiling only
STAIRS NO. 2 (Base to Mass.)	1	Buff of lookout White
STAIRS NOS. 3 AND 4	3	Epoxy finish
STAIR HALL 131	1	
STAIR NO. 1	3	
STORE ROOMS	8	Painted-on base, 5 1/2" high
SUPERINTENDENT'S OFFICE	7	
SWIMMING ROOM	3	
TOILETS	3	Paint doors, trim, and ceiling only
VAULTS	1	
VAULT, P.O.	9	Painted-on base, 5 1/2" high
WORK ROOM, P.O.	9A	

SPECIAL COLOR SCHEMES

SPACE NAME AND NO.	COLOR NO.	SPACE NAME AND NO.	COLOR NO.
COURTROOM		POST OFFICE BOX LOBBY	
Walls above wainscot	33617	South wall	37778
All woodwork	Not fin. oak	Remaining walls	36622
Grilles in plaster	23617	Doors	28440
Plaster ornament	33617	Panel above lock boxes, blank	
Ceiling	White	panels	24440
		Ceiling	White
JUDGE'S OFFICE			
Walls above wainscot	33617	POST OFFICE SERVICE LOBBY	
All wood	Not fin. oak	South wall	37778
Grilles in plaster	23617	Remaining walls	36622
Grilles in woodwork	Match wall	Doors	24440
Ceiling	White	Ceiling	White
		SEC. OFFICE & PUBLIC SPACE	
		315-316	
		Walls above wainscot	33617
		All wood	Not fin. oak
		Ceiling	White

NOTE: UNLESS MODIFIED BY A SPECIAL NOTE, FOLLOW
GENERAL COLOR INSTRUCTIONS, S.D. 6-50-2,
WHERE THEY APPLY TO THE ABOVE SPACES

EXTERIOR PAINT AND COLOR SCHEDULE

NAME	COLOR NO.	NAME	COLOR NO.
BUMPER AND COLUMN ANGLE PROTECTION (Mailing platform)	26440	PIPE RAILINGS AND POSTS	26280
DOORS AND FRAMES (Typical)	26521	VENTS (Foundation walls)	Match brick
DOORS AND FRAMES (Mailing platform)	26440	ALL FERROUS METAL NOT OTHERWISE SCHEDULED	Match adj. surface
DOWN SPOUTS (Mailing platform)	Match brick	ALL NON-FERROUS METAL	Unpainted



SMITH BLANK AND SMITH ARCHITECTS			
APPROVED	ARCHITECTURAL	STRUCTURAL	MECHANICAL/ELECTRICAL
GENERAL SERVICES ADMINISTRATION PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.			
PROJECT: US POST OFFICE COURTHOUSE & F.O.B.			
LOCATION: CLAWSON, IOWA			
STREET: GREEN AVE. AND WHITE ST.			
PROJ. NO. 00-000	FILE NO.		
DRAWN BY: A. Breghel, June 5 '64			
CHECKED BY: J. Parkley			
DRAWING TITLE: SCHEDULES			
ARCHITECTURAL			
DRAWING NO. 5-2			



<u>Drawing No.</u>	<u>Title</u>
28-30-1b (2 Sheets)	Finish Schedule Guide Sheet-Acoustical (Prefabricated Units)
28-30-7A	Finish Schedule Guide Sheet-Brick (facing)
28-30-23A (Sheet 1)	Finish Schedule Guide Sheet-Architectural Metals - Aluminum
28-30-23A (Sheet 2)	Finish Schedule Guide Sheet-Architectural Metals-Brass, Bronze & Stainless Steel
28-30-41A (2 Sheets)	Finish Schedule Guide Sheet - Tile (Ceramic)

SCHEDULE "A"		HOW TO FILL IN THE ABOVE DATA	
ACOUSTICAL (PREFABRICATED UNITS)		NOTE	
SPACES:		Use Schedule "A" where acoustical units occur on ceilings or walls of permanent areas such as courtrooms, post office spaces, and other spaces having permanent partitions, except where otherwise indicated in approved project directive, or in Schedule "C" below. Use Schedule "B" for acoustical units used in General Office Space. General Office Space is defined as space subdivided by movable partitions and having a continuous integrated ceiling on a modular pattern. Use Schedule "C" for acoustical units used where they are part of an hourly fire rated assembly. Any or all of the above schedules may be used, depending on the location of the acoustical units. "SPACES:" (Schedules A, B, and C) List the spaces or rooms in which this finish occurs. If acoustical units are alike throughout the project, omit "SPACES" and the entry. "DESCRIPTION:" (Schedules A, B, and C) State suitable description for each schedule from sheet 2. Descriptions are in accordance with AMA classification. If a particular design or material is required for esthetic reasons, or if special acoustical panels and materials are desired, state appropriate description including materials and finish such as "Perforated aluminum pans with Mineral Fiber Pads".	
DESCRIPTION:			
TREATMENT:			
FLAME SPREAD: 0 to 25			
GRADE: COEF:			
SIZE:		Insert "Auditorium" for the following: courtroom, auditorium, assembly room, chapel, large conference room, broadcasting or recording studio, and similar spaces. Insert "Noise Reduction" for the following: office, corridor, lobby, kitchen, cafeteria, machine room, or similar space. Always state "Noise Reduction" for Schedules B and C. Contract architects shall submit to PBS for approval a complete acoustical analysis of all spaces requiring Auditorium treatment. However, this is not required for Noise Reduction treatment. "FLAME SPREAD:" (Schedule A) Always state "0 to 25". "CLASSIFICATION:" (Schedule B) Always state "Noncombustible". "GRADE:" (Schedules A, B, and C) The coefficient must be determined before "GRADE" is stated. If the "TREATMENT" is "Auditorium" select one of the grades listed in Table II of Federal Specification such as 101, 102, 103, etc. If the "TREATMENT" is "Noise Reduction", select one of the grades listed in table I of Federal Specification, such as "1", "2", "3", etc. The noise reduction coefficient of prefabricated units shall be a minimum of .65 in Office Space. See Sheet No. 2 for Tables I and II of Federal Specification. "COEF:" (Schedules A, B, and C) State the coefficient for the corresponding grade selected.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "B"			
ACOUSTICAL (PREFABRICATED UNITS)		Insert dimensions using standard manufacturers' sizes. Omit thickness as this is determined by "GRADE". Sizes of units applied with adhesive shall be restricted to 12" x 12". If several sizes are used in a single space, state: "See Drawing No. _____". "PATTERN:" (Schedules A, B, and C) Detail pattern of joints and tile, and state "See Drawing No. _____". If pattern is not an important factor in the design, omit "PATTERN" and the entry, and do not detail. For Schedule "B", a reflected ceiling plan shall be drawn and referenced to the entry. See Design Data 28-1-40. For Schedule "C" a reflected ceiling plan is required along with details of recessed fixture enclosures, where they occur. "COLOR:" (Schedules A, B, and C) Insert "Factory Finish White" unless otherwise required. "INSTALLATION:" (Schedule A) "SUSPENSION SYSTEM:" (Schedules B & C) From sheet 2 state an appropriate installation or suspension system for the units used. Suspension systems shall be described in the specifications and not detailed. "S.T.C. (SOUND TRANSMISSION CLASS) OF ASSEMBLY:" (Schedules "B" and "C") For Schedule "B", state "40". The ceiling system shall have a Sound Transmission Class rating of not less than 40 when tested in accordance with Acoustical Materials Association Tentative Method of Test AMA-1-II, and reported in accordance with the method given in the Appendix of the ASTM Designation E 90-61T. See Design Data 28-1-40 and PBS Guide Specification.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "C"			
ACOUSTICAL (PREFABRICATED UNITS)		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "C"			
ACOUSTICAL (PREFABRICATED UNITS)		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "C"			
ACOUSTICAL (PREFABRICATED UNITS)		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "C"			
ACOUSTICAL (PREFABRICATED UNITS)		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
PATTERN:			
COLOR:			
INSTALLATION:			
SCHEDULE "C"			
ACOUSTICAL (PREFABRICATED UNITS)		For Schedule "C", the STC rating requirement shall be determined on an individual case basis. "FIRE RATING OF ASSEMBLY:" (Schedule "C") State required hourly rating, such as "1 hour". Be sure that the total assembly meets the hourly rating requirement. REFERENCES Federal Specification SS-A-118, current issue. Acoustical Materials Association Bulletin, current issue. PBS Guide Specification. ASTM - E -90.	
SPACES:			
DESCRIPTION:			
TREATMENT: Noise Reduction			
GRADE: COEF:			
SIZE:		For Schedule "C	

SCHEDULE "A"		DESCRIPTION	INSTALLATION OR SUSPENSION SYSTEM	NOISE REDUCTION TREATMENT	AUDITORIUM TREATMENT																																																																			
		"Regularly Perforated Cellulose Fiber Tile"	"Applied with adhesive to gypsum board"	Noise Reduction Coefficients.- For noise-reduction treatment, acoustical units, mounted as specified, shall be graded in regard to their sound-absorbing qualities at the four frequencies 250,500, 1000, 2000 cycles. The average of the sound absorption coefficients at these four frequencies will be the noise-reduction coefficient. For grading purposes the average will be taken to the nearest multiple of 0.05. If the average results in a value exactly midway between two grades, then the product shall be placed in the grade having the higher noise-reduction coefficient.	For auditorium treatment, acoustical units mounted as specified shall be graded in regard to their sound-absorbing qualities at 500 cycles per second and subject to the further requirements that the coefficient of sound absorption at 125 cycles shall be not less than 1/8 of the coefficient at 500 cycles.																																																																			
		"Random Perforated Cellulose Fiber Tile"	"Applied with adhesive to plaster"																																																																					
		"Textured, Finely Perforated, or Fissured Cellulose Fiber Tile"	****"Applied with adhesive to concrete"																																																																					
		* "Perforated Mineral Fiber Tile"	*****"Applied with adhesives and mechanical fastenings to gypsum board"																																																																					
		* "Fissured Mineral Fiber Tile"	*****"Applied with adhesives and mechanical fastenings to plaster"																																																																					
		* "Textured, Finely Perforated, or Smooth Mineral Fiber Tile"																																																																						
		* "Membrane Faced Mineral Fiber Tile"																																																																						
		** "Perforated Asbestos Board Panels with Mineral Fiber Pads"	"Applied to wood furring"																																																																					
SCHEDULE "B"		"Mineral Fiber Lay-in Panels"	"Exposed grid, steel"	TABLE I. - NOISE-REDUCTION COEFFICIENTS <table><tr><th>GRADE</th><th>COEFFICIENTS</th></tr><tr><td>1</td><td>.90 or greater</td></tr><tr><td>2</td><td>.85</td></tr><tr><td>3</td><td>.80</td></tr><tr><td>4</td><td>.75</td></tr><tr><td>5</td><td>.70</td></tr><tr><td>6</td><td>.65</td></tr><tr><td>7</td><td>.60</td></tr><tr><td>8</td><td>.55</td></tr><tr><td>9</td><td>.50</td></tr><tr><td>10</td><td>.45</td></tr><tr><td>11</td><td>.40</td></tr><tr><td>12</td><td>.35</td></tr></table>	GRADE	COEFFICIENTS	1	.90 or greater	2	.85	3	.80	4	.75	5	.70	6	.65	7	.60	8	.55	9	.50	10	.45	11	.40	12	.35	TABLE II - AUDITORIUM TREATMENT COEFFICIENTS. <table><tr><th rowspan="2">Grade</th><th colspan="2">COEFFICIENT AT 500 CYCLES</th></tr><tr><th>Less Than</th><th>Equal to or More Than</th></tr><tr><td>101</td><td></td><td>0.90</td></tr><tr><td>102</td><td>0.90</td><td>.85</td></tr><tr><td>103</td><td>.85</td><td>.80</td></tr><tr><td>104</td><td>.80</td><td>.75</td></tr><tr><td>105</td><td>.75</td><td>.70</td></tr><tr><td>106</td><td>.70</td><td>.65</td></tr><tr><td>107</td><td>.65</td><td>.60</td></tr><tr><td>108</td><td>.60</td><td>.55</td></tr><tr><td>109</td><td>.55</td><td>.50</td></tr><tr><td>110</td><td>.50</td><td>.45</td></tr><tr><td>111</td><td>.45</td><td>.40</td></tr><tr><td>112</td><td>.40</td><td>.35</td></tr></table>	Grade	COEFFICIENT AT 500 CYCLES		Less Than	Equal to or More Than	101		0.90	102	0.90	.85	103	.85	.80	104	.80	.75	105	.75	.70	106	.70	.65	107	.65	.60	108	.60	.55	109	.55	.50	110	.50	.45	111	.45	.40	112	.40	.35
		GRADE	COEFFICIENTS																																																																					
		1	.90 or greater																																																																					
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		3	.80																																																																					
		4	.75																																																																					
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104	.80	.75																																																																						
105	.75	.70																																																																						
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110	.50	.45																																																																						
111	.45	.40																																																																						
112	.40	.35																																																																						
		"Perforated Metal Lay-in Panels with Mineral Fiber Pads"	"Exposed grid, aluminum"																																																																					
		"Perforated Asbestos Board Panels with Mineral Fiber Pads"	"Exposed grid, stainless steel"																																																																					
		"Perforated Mineral Fiber Tile"	"Semi-Exposed Grid, steel"																																																																					
		"Fissured Mineral Fiber Tile"	"Semi-Exposed Grid, aluminum"																																																																					
		"Textured, Finely Perforated or Smooth Mineral Fiber Tile"	"Semi-Exposed Grid, stainless steel"																																																																					
		"Membrane Faced Mineral Fiber Tile"	"Concealed"																																																																					
		"Perforated Asbestos Board Panels with Mineral Fiber Pads"	"Nailing Runner Suspension System"																																																																					
		"Perforated Metal Pans with Mineral Fiber Pads"	"Metal Pan Suspension System"																																																																					
SCHEDULE "C"		"Mineral Fiber Lay-in Panels Rated as Part of Fire Resistive Assembly"	"Exposed Grid, steel"																																																																					
			"Exposed Grid, aluminum"																																																																					
			"Exposed Grid, stainless steel"																																																																					
		"Mineral Fiber Tile Rated as Part of Fire Resistive Assembly"	"Semi-exposed Grid, steel"																																																																					
			"Semi-exposed Grid, aluminum"																																																																					
			"Semi-exposed Grid, stainless steel"																																																																					
			"Concealed"																																																																					
NOTES		* Back of units shall be primed, see PBS Guide Specification ** Use restricted to walls	***Not generally applicable to new construction ****Applicable to cellulose fiber tile when used in corridors, exitway, and normal means of egress.																																																																					
FILE NO.		FINISH SCHEDULE GUIDE SHEET		SHEET 2 of 2																																																																				
DATE		ACOUSTICAL (PREFABRICATED UNITS)		DWG. NO. 28-30-1B																																																																				
REVISED 4-30-63		PUBLIC BUILDINGS SERVICE GENERAL SERVICES ADMINISTRATION		DESIGN DATA																																																																				

SCHEDULE "A"

BRICK (FACING)

TEXTURE:

COLOR:

ACTUAL SIZE:

BOND:

JOINT MORTAR COLOR:

JOINT PROFILE:

SCHEDULE "B"

BRICK (FACING)

SPACE: P.O. Workroom and Mailing Vestibule

TEXTURE: SD 6-5-2, Smooth Face-No Spots

COLOR: (Buff)(Light Gray)(Light Red)(Med.Red)

ACTUAL SIZE: (2 1/4" x 3 3/4" x 7 5/8") (2 1/4" x 3 3/4" x 8")

BOND: S.D. 6-5-1(Running)(Common"A")

JOINT MORTAR COLOR: Gray

JOINT PROFILE: S.D. 6-5-1, Concave

SCHEDULE "C"

BRICK (CERAMIC GLAZED FACING)

COLOR AND TEXTURE:

ACTUAL SIZE:

BOND:

JOINT MORTAR COLOR:

JOINT PROFILE:

HOW TO FILL IN THE ABOVE DATA

NOTE

Schedule "A" is for facing brick used as an exterior or interior finish.

Schedule "B" is for facing brick wainscot in Post Office Work Room and Mailing Vestibule. It is identical to Schedule "A" except that data has been filled in, in accordance with Post Office requirements. Select one of the optional items shown in parenthesis. Schedule "C" is for ceramic glazed facing brick used as exterior or interior finish.

"TEXTURE": (Schedule "A")

Select texture from Standard Detail 6-5-2 through 6-5-14 and indicate S.D. number and name. Example: "S.D. 6-5-5, Medium".

"COLOR": (Schedule "A")

State the general color. Example: "Red" "Gray", "Buff".

"COLOR AND TEXTURE": (Schedule "C")

State the basic color and color intensity desired.

If brick has smooth texture, state "smooth".

If brick has mottled or stippled texture state the color of the field and the color of the mottle or stipple. Examples:
"Light Blue, Smooth".
"Light Blue Field, Stippled White".
"Light Blue Field, Mottled White".

Architect shall have in his office for reference, samples of brick selected. Samples shall be sufficient to show maximum color range permitted.

Use Federal Standard 595 as a reference for color gradation and as a guide for selecting samples. However, do not designate the colors by Federal Standard numbers or by manufacturers trade name.

"ACTUAL SIZE": (Schedule "A" & "C")

State the actual dimensions of the units selected, generally; 2-1/4" x 3-3/4" x 8" or 2-1/4" x 3-5/8" x 7-5/8". Joint thickness will be determined from dimensions on drawings.

"BOND": (Schedules "A" & "C")

Select a bond from Standard Detail 6-5-1 and indicate S.D. number and name. Example: "S.D. 6-5-1, English".

"JOINT MORTAR COLOR": (Schedules "A" & "C")

State color.

"JOINT PROFILE": (Schedules "A" & "C")

Select a joint from Standard Detail 6-5-1

JAH
 3-30-64
 "AB"
 3-30-64
 "AE"
 3-30-64
 "DB"
 3-30-64
 "NE"
 3-30-64
 "S"
 3-30-64

CERAMIC TILE CLASSIFICATION TABLE

TYPE I - Unglazed Tile (flat)

TYPE II - Glazed Tile (flat)

TYPE III
Trim units

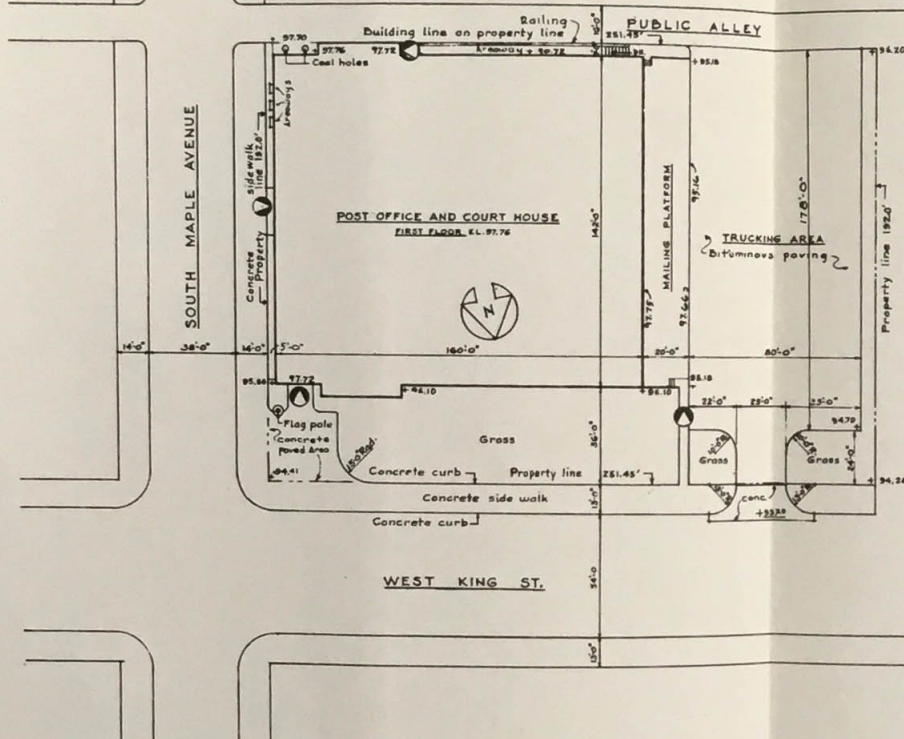
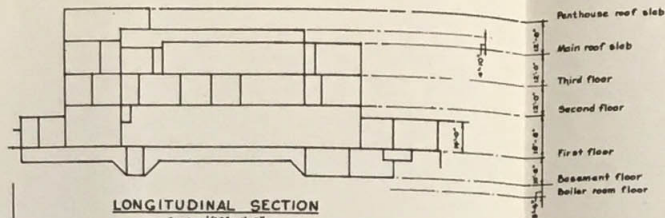
CLASS	DESCRIPTION	RECOMMENDED USES
A	PORCELAIN Ceramic Mos. sizes	Generally suitable for interior and exterior walls, and floors.
B	NATURAL CLAY Ceramic Mos. sizes	Walls and floors not subject to heavy traffic or excessive staining.
C	QUARRY Quarry Tile sizes	Especially adapted to floors or other heavy duty purposes, interior, exterior and promenade roof.
D	FAIENCE Ceramic Mos. sizes	Specialty material, generally for decorative effects only.
E	SPECIAL-PURPOSE	Abrasive or other special requirements or properties as detailed or specified.
F	CONDUCTIVE Ceramic Mos. sizes	For controlled electrical conductivity; hospital anesthesia, industrial explosive areas.
G	INTERIOR (WALL) Glazed flat, wall tile sizes	Interior walls and countertops. Not suitable for severe service conditions.
H	EXTRA DUTY-Glaze Glazed wall tile sizes	Interior and exterior walls subject to freezing, thawing and severe conditions as specified.
I	FAIENCE Ceramic Mos. sizes	Specialty material, generally for decorative effects only.
J	CERAMIC MOSAIC	Generally suitable for interior and exterior walls, and for countertops.
K	SPECIAL PURPOSE	Special requirements or properties as detailed or specified.
L	UNGLAZED	To be used with appropriate units. See schedule of trim shapes in Fed. Spec. SS-T-308.
M	GLAZED	

FILE NO.		FINISH SCHEDULE GUIDE SHEET TILE (CERAMIC)	Sheet 2 of 2
DATE			DWG. No. 28-30-41A
REVISED	3-30-64	PUBLIC BUILDINGS SERVICE GENERAL SERVICES ADMINISTRATION	DESIGN DATA

APPENDIX F.
SAMPLE
ASSIGNMENT PLANS

<u>Drawing No.</u>	<u>Title</u>
14-1	Site Plan
14-2	Basement Floor Plan
14-3	First Floor Plan
14-4	Mezzanine, Equip. & Low Roof Plan
14-5	Second Floor Plan
14-6	Third Floor Plan
14-7	Penthouse Plan and Roof Plans

STAINLESS STEEL		"FINISH": Insert AISI (American Iron and Steel Institute) designation number from the table below for finish selected.		ARCHITECTURAL BRONZE (Extrusions) ITEMS: FINISH: RED BRASS (Sheet & Tubular Form) ITEMS: FINISH: MUNTZ METAL (Sheet) ITEMS: FINISH: MONEL (Ornamented Castings) ITEMS: FINISH: HIGHLIGHTED: YELLOW BRASS (Ornamented Castings) ITEMS: FINISH: HIGHLIGHTED: HOW TO FILL IN THE ABOVE DATA "ITEMS": For Exterior Materials state, "as shown", or list applicable items thus: mullions, entrance units, trim members. Continue list to include all items.		For Interior Materials, omit items heading and assign material number as required by Drawing Requirements Handbook. Where this is not practicable, follow instructions for Exterior Materials. "FINISH": Insert desired finish from table below. "HIGHLIGHTED": If highlighting is used, state "YES". Otherwise omit this entry. (Highlighting as used here is the process of creating two-tone effects on ornamental metal by brightening the raised surfaces to contrast with the lower planes).	
"ITEMS": For Exterior Materials state "as shown", or list applicable items thus: mullions, entrance units, trim members. Continue list to include all items. For Interior Materials omit items heading and assign material number as required by Drawing Requirements Handbook. Where this is not practicable, follow instructions for Exterior Materials.		NOTES 1. Color of Stainless Steel is always natural. Applied color finishes are not within the scope of this sheet. 2. Ornamented castings of stainless steel are rare in architecture and have been omitted. 3. Avoid the use of large flat surfaces, especially with polished finishes. 4. Physical samples of selection shall be provided in the Contract Architect's Office during the bidding period.					
TABLE OF STANDARD MECHANICAL FINISHES FOR STAINLESS STEEL							
AISI Finish Designa- tion No.	DESCRIPTION	RECOMMENDED USES					
2D	Dull, non-reflective unpolished surface	More economical than the polished finishes. Suitable for spandrel panels, fascia, general exterior use and wherever a fine finish close up appearance is not critical.					
2B	Bright, glossy, unpolished, surface						
3	Polished, grained	Suitable for exterior application at eye level, such as mullions, trim, column covers.					
4	Polished, bright						
6	Polished, soft satin	For architectural applications where low reflectivity or effective contrast with brighter finishes is desirable.					
7	High luster, polished.	Wherever an extremely smooth, very bright polish is desired and for contrast to other finishes.					
NOTE: Finishes listed in this table are only those commonly used for architectural applications.							
FILE NO.	FINISH SCHEDULE GUIDE SHEET		Sheet 2 of 2				
DATE	ARCHITECTURAL METALS		DWG. NO. 28-30-23A				
REVISED	BRASS, BRONZE AND STAINLESS STEEL		DESIGN DATA				
3-30-64		PUBLIC BUILDINGS SERVICE GENERAL SERVICES ADMINISTRATION		REFERENCES:			
				1. PBS Guide Specification. 2. PBS Drawing Requirements Handbook. 3. NAAMM Curtain Wall Manual. 4. A.I.S.I. Steel Products Manual.			



GROSS AREA OF LOT 48,180 SQ. FT.
 GROUND AREA OF BUILDING 24,000 SQ. FT.
 TOTAL VOLUME OF THE BUILDING 1,017,000 CU. FT.
 CONSTRUCTION IS NOT DESIGNED FOR ANY ADDITIONAL STORIES.

GRAND TOTALS FOR BUILDING

In Square Feet

Net agency areas including
 Custodial areas (Except P.O.) 21,280
 Net Post Office Areas 23,540
 Net Assignable Areas 44,820
 Circulation, Mechanical and
 Construction Areas 23,920
 GROSS AREA 68,740 Sq. Ft.

**DESIGN AND CONSTRUCTION DIVISION
 REGION 6 - KANSAS CITY, MO.**

GENERAL SERVICES ADMINISTRATION
 PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

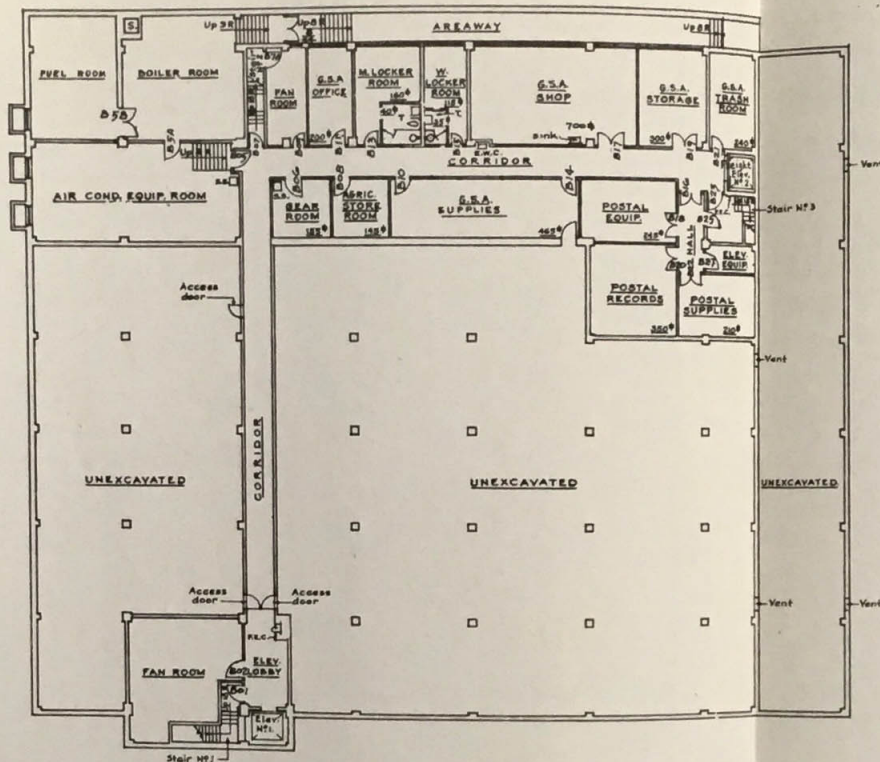
PROJECT U. S. POST OFFICE & COURT HOUSE
 LOCATION TRENT, IOWA
 STREET WEST KING ST. AND SOUTH MAPLE AVE.
 PROJ. NO. 00-000 FILE NO.
 DRAWN BY BROWN 12-4-56 CHECKED BY JONES

DRAWING TITLE SITE PLAN

ASSIGNMENT PLANS

DRAWING NO. 14-1 OF 7

(10-1-56)



BASEMENT FLOOR PLAN

Scale: 1/8" = 1'-0"

Graphic scale
0' 5' 10' 15' 20' 25'



(10-1-54)

BASEMENT PLAN

In Square Feet

Net Agency Areas Including

Custodial Areas (Except P.O.) 2,555

Net Post Office Areas 805

Net Assignable Areas 3,360

Circulation, Mechanical and

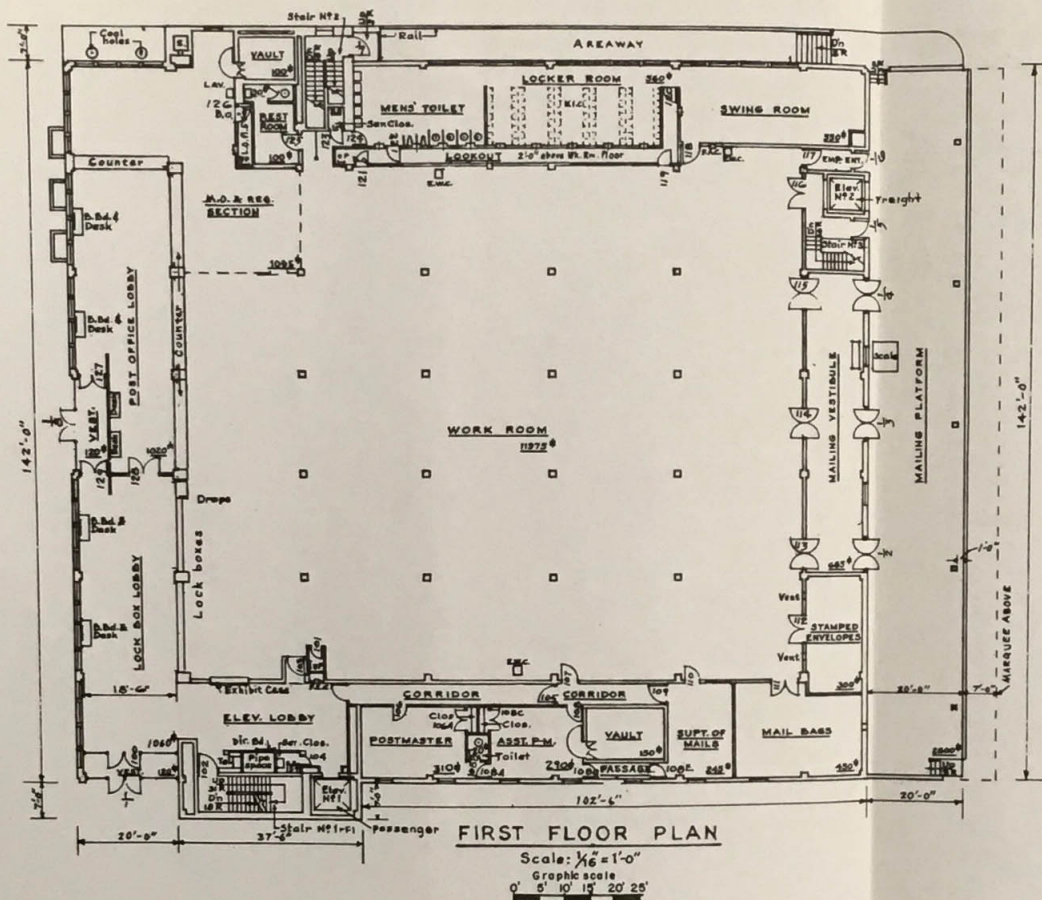
Construction Areas **6,350**

GROSS AREA 9,710 Sq. Ft.

**DESIGN AND CONSTRUCTION DIVISION
REGION 6 - KANSAS CITY, MO.**

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

PROJECT	U. S. POST OFFICE & COURT HOUSE		
LOCATION	TRENT, IOWA		
STREET	WEST KING ST. AND SOUTH MAPLE AVE.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	BROWN	CHECKED BY	JONES
DRAWING TITLE	BASEMENT FLOOR PLAN		
	ASSIGNMENT PLANS		
DRAWING NO.	14-2 OF 7		



FIRST FLOOR

In Square Feet

Net Agency Areas Including	
Custodial Areas (Except P.O.)	30
Net Post Office Areas	21,980
Net Assignable Areas	22,010
Circulation, Mechanical and	
Construction Areas	4,070

GROSS AREAS 26,080 Sq. Ft.

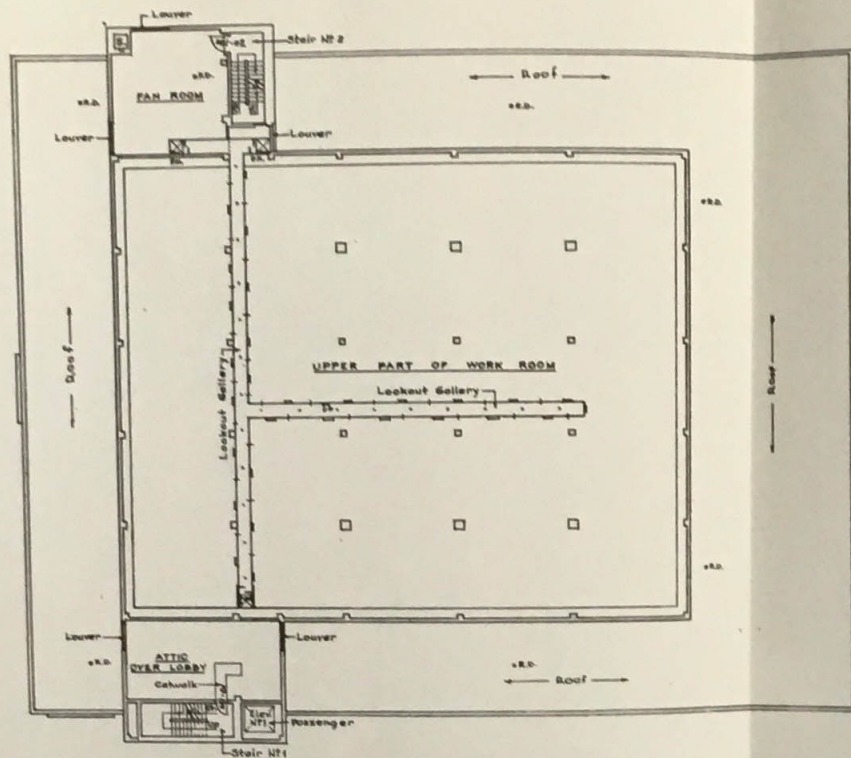
DESIGN AND CONSTRUCTION DIVISION REGION 6 - KANSAS CITY, MO.

GENERAL SERVICES ADMINISTRATION
 PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

PROJECT	U. S. POST OFFICE & COURT HOUSE		
LOCATION	TRENT, IOWA		
STREET	WEST KING ST. AND SOUTH MAPLE AVE.		
FOOL NO.	00-000	FILE NO.	
DRAWN BY	BROWN	CHECKED BY	JONES
DRAWING TITLE	FIRST FLOOR PLAN ASSIGNMENT PLANS		
DRAWING NO.	14-3 OF 7		



(10-1-50)



MEZZANINE, EQUIPMENT AND LOW ROOF PLAN

Scale: 1/8" = 1'-0"
Graphic scale
0' 5' 10' 15' 20' 25'

MEZZANINE PLAN

In Square Feet

Net Agency Areas including	
Custodial Areas (Except P. O.)	0
Net Post Office Areas	0
Net Assignable Areas	0
Circulation, Mechanical and	
Construction Areas	1,035
GROSS AREA	1,035 Sq. Ft.

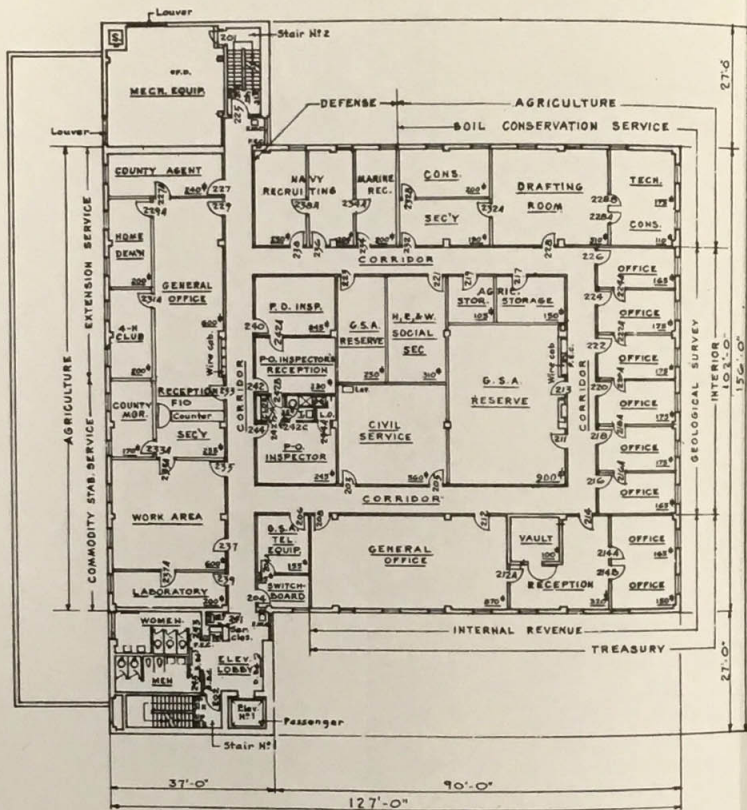
**DESIGN AND CONSTRUCTION DIVISION
REGION 6 - KANSAS CITY, MO.**

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

PROJECT	U.S. POST OFFICE & COURT HOUSE
LOCATION	TRENT, IOWA
STREET	WEST KING ST. AND SOLMAPLE AVE.
PROJ. NO.	00-000
FILE NO.	
DRAWN BY	BROWN JR. 4-36
CHECKED BY	JONES
DRAWING TITLE	MEZZANINE EQUIP. & LOW ROOF PLAN
ASSIGNMENT PLANS	
DRAWING NO.	14-4 OF 7



(10-1-56)



SECOND FLOOR PLAN

Scale: 1/8" = 1'-0"

Graphic scale
0' 5' 10' 15' 20' 25'

SECOND FLOOR PLAN

In Square Feet

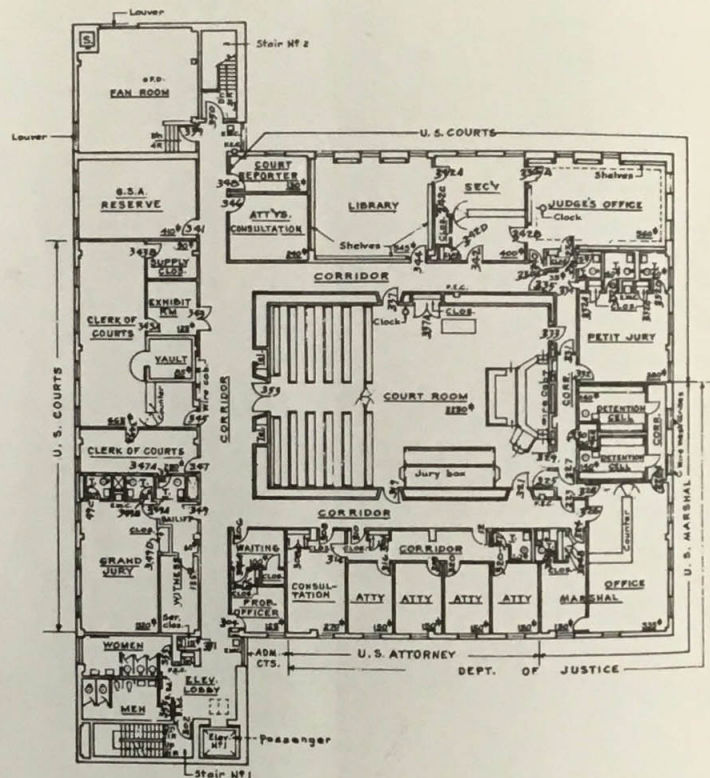
Net Agency Area Including	
Custodial Area (Except P.O.)	9,485
Net Post Office Areas	755
Net Assignable Areas	10,220
Circulation, Mechanical and	
Construction Areas	4,960
GROSS AREA	15,180 Sq. Ft.

DESIGN AND CONSTRUCTION DIVISION
REGION 6 - KANSAS CITY, MO.

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE - WASHINGTON, D.C.

PROJECT	U.S. POST OFFICE & COURT HOUSE		
LOCATION	TRENT, IOWA		
STREET	WEST KING ST. AND SOUTH MAPLE AVE.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	BROWN	12-4-56	CHECKED BY JONES
DRAWING TITLE	SECOND FLOOR PLAN		
	ASSIGNMENT PLANS		
DRAWING NO.	14-5 OF 7		





THIRD FLOOR PLAN

Scale: 1/16"=1'-0"

Graphic scale
0 5' 10' 15' 20' 25'

THIRD FLOOR PLAN

In Square Feet

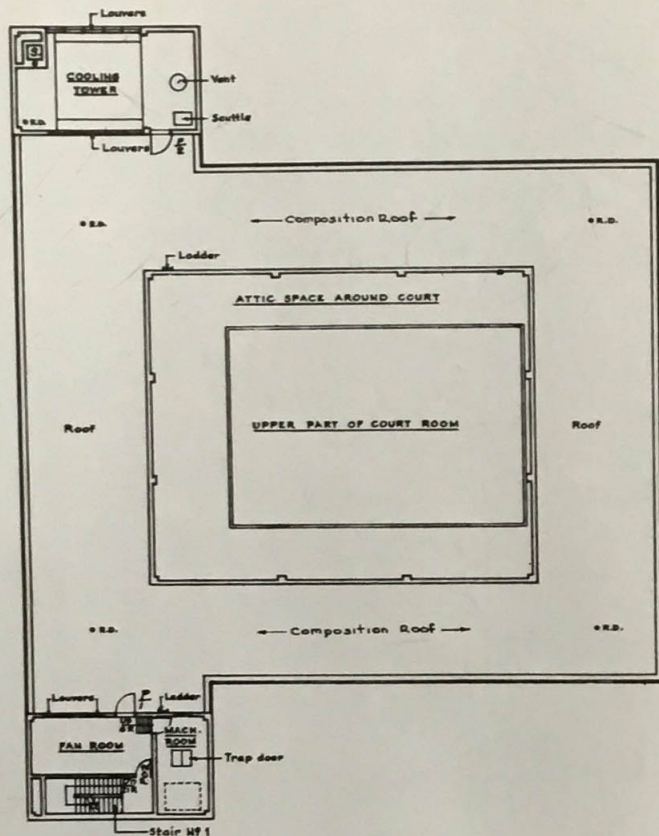
Net Agency Area Including	
Custodial Areas (Except P.O.)	9,230
Net Post Office Areas	0
Net Assignable Areas	9,230
Circulation, Mechanical and	
Construction Area	5,950
GROSS AREA	15,180 Sq. Ft.

DESIGN AND CONSTRUCTION DIVISION
REGION 6 - KANSAS CITY, MO.

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE - WASHINGTON, D. C.

PROJECT	U. S. POST OFFICE & COURT HOUSE		
LOCATION	TRENT, IOWA		
STREET	WEST KING ST. AND SOUTH MAPLE AVE.		
PROJ. NO.	00-000	FILE NO.	
DRAWN BY	BROWN	CHECKED BY	JONES
DRAWING TITLE	THIRD FLOOR PLAN		
	ASSIGNMENT PLANS		
DRAWING NO.	14-6 OF 7		



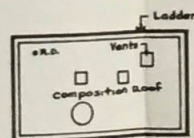


PENTHOUSE AND MAIN ROOF PLAN

Scale: $\frac{1}{16}'' = 1'-0''$
Graphic scale
0' 5' 10' 15' 20' 25'



PENTHOUSE ROOF PLAN



PENTHOUSE PLAN

In Square Feet

Net Agency Areas Including

Custodial Areas (Except P. O.) 0

Net Post Office Areas 0

Net Assignable Areas 0

Circulation, Mechanical and

Construction Areas 1,555

GROSS AREA 1,555 Sq. Ft.

DESIGN AND CONSTRUCTION DIVISION
REGION 6 - KANSAS CITY, MO.

GENERAL SERVICES ADMINISTRATION
PUBLIC BUILDINGS SERVICE WASHINGTON, D. C.

PROJECT U.S. POST OFFICE & COURT HOUSE

LOCATION TRENT, IOWA.

STREET WEST KING ST. AND SO. MAPLE AVE.

PROJ. NO. 00-000 FILE NO.

DRAWN BY BROWN 12-4-54 CHECKED BY JONES

DRAWING TITLE PENTHOUSE PLAN AND ROOF PLANS

ASSIGNMENT PLANS

DRAWING NO. 14-7 OF 7



(10-1-56)

Gas Manual for P.O. Constitution

Statement of Qualifications for Design of New Bureau Mint Bn Co
The Ken R. White Co.

STATEMENT OF QUALIFICATIONS

FOR

DESIGN OF NEW DENVER MINT

Denver, Colorado

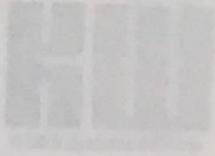
Prepared by:

THE KEN R. WHITE COMPANY
3955 East Exposition Avenue
Denver, Colorado 80209



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THE KEN R. WHITE COMPANY

Head Office: 1000 Broadway, Suite 2000, Denver, Colorado 80202

Branch Office: 3000 Broadway, Suite 300, Denver, Colorado - 303.744.1261

Photogrammetry

Planning

January 5, 1972

Soils Investigations

Landscape Design

Computer Capabilities

Capabilities of Affiliates

Praeger-Kavanagh-Waterbury

John Blume and Associates

Standard Form 251

Capsule Resumes of Selected Personnel

The accompanying materials outline briefly the pertinent capabilities of this substantial, local firm and the special expertise of our affiliate firms Praeger-Kavanagh-Waterbury and John A. Blume & Associates. The staffs of the firms have specific and extensive experience in the design of such government facilities as the old Denver and San Francisco Mints, the Denver Federal Reserve Branch Bank, The White House, and the U.S. Capitol Building.

In total, the three affiliates employ approximately 600 professional and support personnel. In addition to our extensive architectural and process facility design experience, we have been active for many years in the solution of pollution abatement problems for manufacturing operations. Further, we have recent extensive experience in the development of environmental impact statements for both public and private entities.

We would welcome an opportunity to discuss the project with you in greater detail and are available for such discussions at

THE KEN R. WHITE COMPANY

Mailing Address: P.O. Drawer 6218 • Denver, Colorado 80206
3955 East Exposition Avenue • Suite 300 • Denver, Colorado • 303/744-1861



January 5, 1972

Mrs. Betty Higby, Superintendent
Denver U.S. Mint
West Colfax Avenue & Delaware Street
Denver, Colorado

Dear Mrs. Higby:

It is a pleasure to submit, for your consideration, the qualifications of The Ken R. White Company and its affiliates of URS Systems Corporation to provide architect-engineer services for the proposed Denver Mint.

The accompanying materials outline briefly the pertinent capability of this substantial, local firm and the special expertise of our affiliate firms Praeger-Kavanagh-Waterbury and John A. Blume & Associates. The staffs of the firms have specific and extensive experience in the design of such government facilities as the old Denver and San Francisco Mints, the Denver Federal Reserve Branch Bank, The White House, and the U.S. Capitol Building.

In total, the three affiliates employ approximately 600 professional and support personnel. In addition to our extensive architectural and process facility design experience, we have been active for many years in the solution of pollution abatement problems for manufacturing operations. Further, we have recent extensive experience in the development of environmental impact statements for both public and private entities.

We would welcome an opportunity to discuss the project with you in greater detail and are available for such discussions at your convenience. Your consideration of our firm is greatly appreciated.

Sincerely,

THE KEN R. WHITE COMPANY

Arthur M. Krill
President

AMK:fs
Enclosure



To be of maximum benefit to a client, the engineering and architectural firm today must provide comprehensive and carefully integrated services in a variety of fields. As the result of a long-range program of planned growth, The Ken R. White Company offers a full complement of engineering: civil, structural, mechanical, industrial, electrical, foundation and soils; architecture, and planning services. In addition, through its URS Systems Corporation affiliates, the firm has available expert research and development services in socio-economic and physical science fields. The advantages to the client of having all of these services available from a single-source organization are becoming more and more significant as design problems and their solutions become increasingly complex. Few organizations in our country possess the breadth of experience, the broad spectrum of staff background and the extensive technical facilities needed to satisfy all of today's demanding engineering, architectural and planning needs. The record of The Ken R. White Company has demonstrated the high degree to which the firm has blended these necessary elements into a team which offers its clientele the advantages of a fully integrated multi-discipline professional service.

When the company was founded in 1953, its stated objective was "To provide the highest quality of professional service to all clients." The officers and staff of the company have retained this concept as a guiding principle, and today the company is the largest consulting engineering-architectural-planning firm in the Rocky Mountain area, with nearly 200 engineers, architects, planners, technicians and supporting personnel. From its headquarters in Denver and from its numerous branch offices, The Ken R. White Company directly serves government and industry in the United States and abroad.

Services frequently performed for a wide variety of clientele include: economic feasibility studies, site selection studies, preliminary engineering reports, master planning, cost estimates, specifications, final working drawings, construction surveillance, photogrammetry, and soils testing and analysis. Assistance and professional services furnished to the client are tailored to his particular needs, and may range from minor modifications in existing construction to the overall detailed design and supervision of construction of a major industrial facility.

Facilities and Equipment utilized by The Ken R. White Company include 50,000 square feet of modern office and laboratory space, and computer center equipped with an IBM 1130 computer plus a full complement of peripheral equipment including a CalComp plotter; a complete photogrammetric laboratory which includes a digitized Wild A-7 Stereo-Autograph first-order plotter plus four Kelsh and two Bausch and Lomb stereo-optical plotters and an Auto-Trol digitizer; a complete photo laboratory; a fully equipped soils and materials testing laboratory; precision field survey equipment including electronic distance measuring equipment; two drill rigs, a Benklemann Beam, and soils resistivity measuring devices for use in evaluating subsurface soil conditions.



THE KEN R. WHITE COMPANY

3955 East Exposition Avenue
Denver, Colorado 80209

The Ken R. White Company, an affiliate of URS System Corporation, has its main office in Denver, Colorado, and local offices in Washington, D. C.; Phoenix, Arizona; Helena, Montana; Seattle, Washington; Omaha, Nebraska; Miami, Florida; Salt Lake City, Utah; and Honolulu, Hawaii. The principal officers of the firm are:

President	Arthur M. Krill, PE
Vice President Architecture	Donald E. Preszler, PE, RA
Vice President Industrial Engineering	George L. Koonsman, PE, LS
Vice President Transportation	A. E. Menhennett, PE
Vice President Planning and Development	C. R. Cavanagh, AIP
Secretary-Treasurer	T. D. Gray

Each of the departments is well-staffed with professional and technical personnel. As individuals, these persons are specialists in their respective fields of knowledge; but in serving the client whose problem requires the attention of more than one discipline, they become members of a multi-disciplinary team.

The multi-disciplinary, or "team" approach is a natural one at The Ken R. White Company. Often regarded as something new, this approach has been used effectively by the firm for many years. Particularly in the fields of Planning and Transportation Design, the combined skills of planners, architects, and various kinds of engineers have been shown



THE KEN R. WHITE COMPANY - A MULTI-DISCIPLINARY CONSULTANT

Since its inception in 1953, The Ken R. White Company has grown steadily in both size and diversity of capability. Its long-range program of orderly growth has been guided by a fundamental belief that, to be of maximum service to its clientele, the consulting firm must provide comprehensive and carefully integrated service in a variety of fields.

Guided by that principle, The Ken R. White Company today offers comprehensive services in planning, engineering and architecture. Some idea as to the diversity of its capabilities is given by a list of its departments: planning, photogrammetry, computer, soils and foundations, bridge; and civil, mechanical, electrical, industrial, structural and transportation engineering.

The firm now numbers in excess of 200 employees, almost three-quarters of whom are professional or technical personnel. In addition to its main office in Denver, Colorado, the firm maintains offices in Seattle, Washington; Helena, Montana; Phoenix, Arizona; Miami, Florida; Omaha, Nebraska; Honolulu, Hawaii; and Salt Lake City, Utah. As an affiliate of URS Systems Corporation, KRW may draw upon the expertise of the other URS affiliates in economics, systems analysis, and numerous other specialities.

Each of the departments is well-staffed with professional and technical personnel. As individuals, these persons are specialists in their respective fields of knowledge; but in serving the client whose problem requires the attention of more than one discipline, they become members of a multi-disciplinary team.

The multi-disciplinary, or "team" approach is a natural one at The Ken R. White Company. Often regarded as something new, this approach has been used effectively by the firm for many years. Particularly in the fields of Planning and Transportation Design, the combined skills of planners, architects, and various types of engineers have been assembled in multi-disciplinary teams which have produced better over-all designs and compatible solutions to the complex problem of engineering, economics, aesthetics and community needs.



-2-

The assembly of such a team is extremely simple at KRW, since all of its members are already on the staff. Outside consultants are seldom needed, since personnel of the various disciplines involved are already accustomed to working together and are acquainted with one another's needs. This helps to insure quality, efficiency, and promptness of results.

The firm's services are available to its clientele on a world-wide basis, with offices maintained in locations as required to best meet the needs of individual clients. Each project manager has available to him the full resources of the organization in order to insure optimum client satisfaction.

PHOTOGRAPHS

PROJECT DESCRIPTIONS

TYPICAL MANUFACTURING FACILITY DESIGN PROJECTS



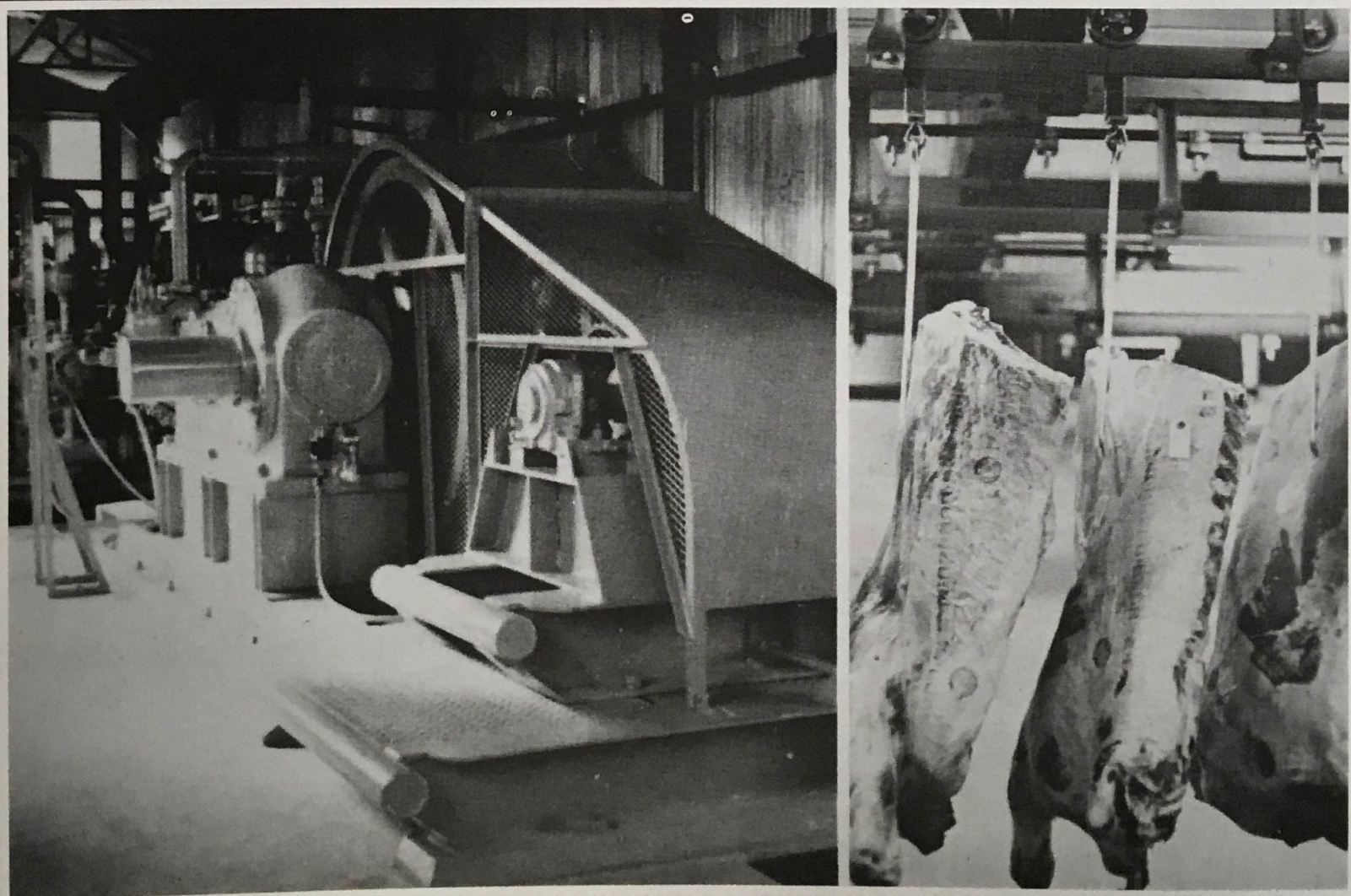
Complete Engineering Services For Industrial Projects . . . Cement plants and related facilities, including water and rail terminals . . . a new pyrotechnics production line for a munitions plant . . . meat packing plants . . . a preliminary layout for the manufacture of luggage hardware . . . special machine design for a rubber tire and hose factory. These are examples of the variety of industrial projects engineered by The Ken R. White Company. The challenge of such a wide assortment of problems is welcomed by the Industrial Engineering Department.

These nine massive silos, each 36 feet in diameter and 158 feet high, were designed for construction by the slipform method for the Ideal Cement Company at Portland, Colorado.



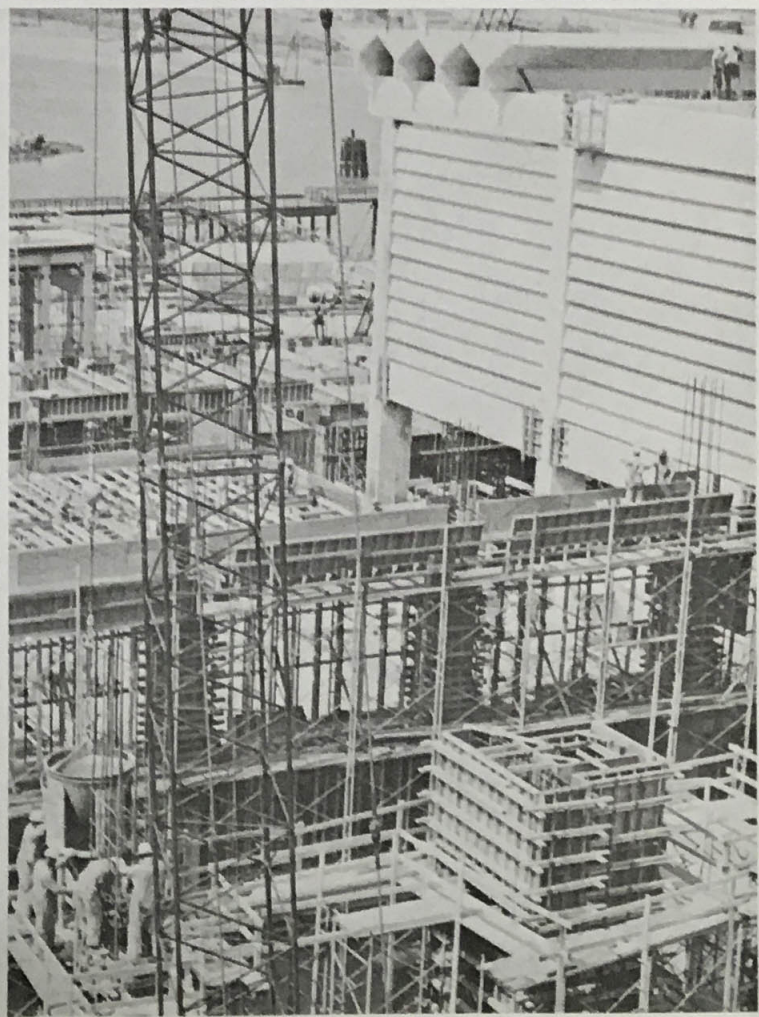
Shown below on the left is an interior view of the West Douglas Creek Compressor Station addition with a throughput of 14,000 MCFD, designed for the Western Slope Gas Company.

Electronic memory units, walking rail beams and two-way radios are the tools of the advanced system for carcass handling designed by The Ken R. White Company's Industrial Engineering Department for the Monfort Packing Company, Greeley, Colorado.



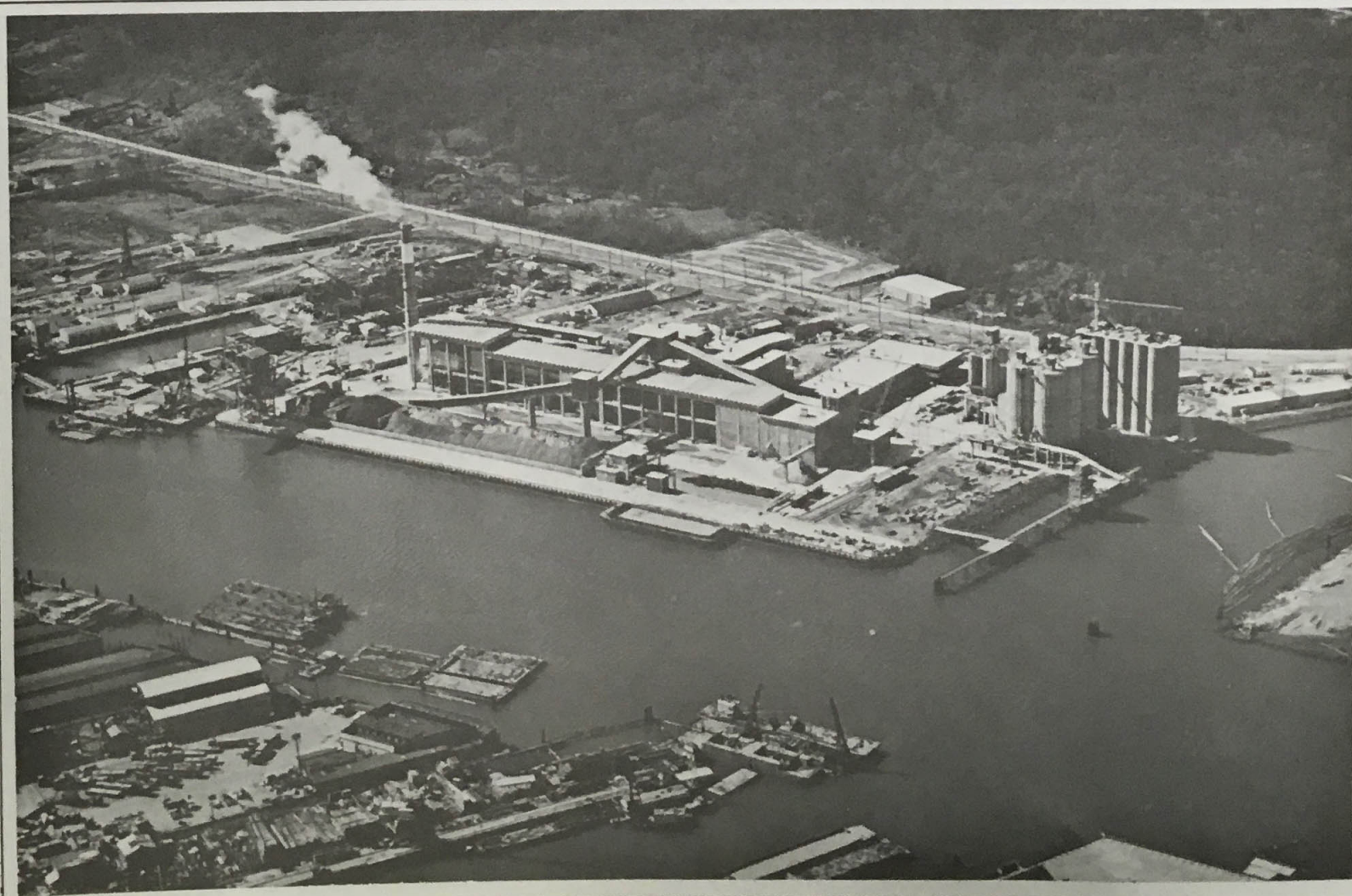
This view from the waterfront gantry of the Ideal Cement plant in Seattle, Washington, shows the kiln building and raw storage reclaim area. The prestressed Y-members that form the kiln roof are 70 feet long. A total of 120,000 yards of concrete was used in the construction of the complex.

The completely precast kiln building at right has several bays covered with attractive horizontal precast, prestressed louvers.

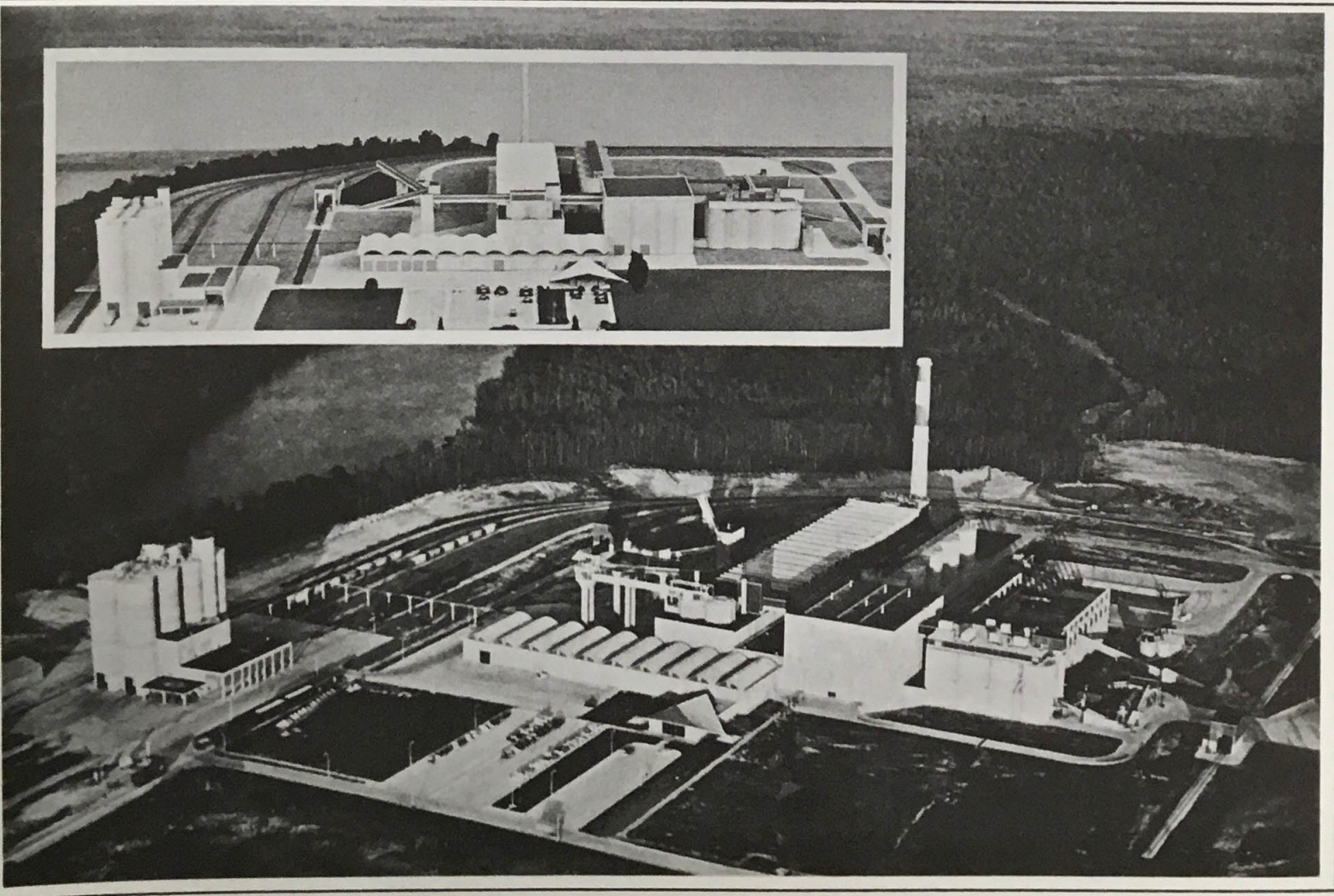
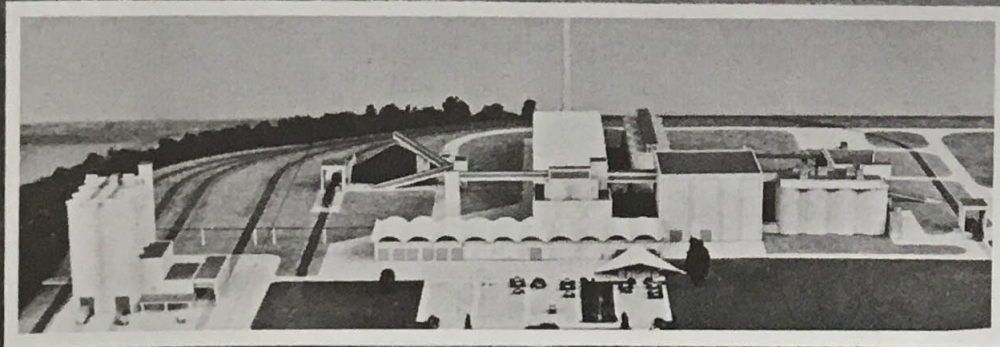


Ideal Cement Plant, Seattle, Washington. Completed in 1967, this new facility for Ideal Cement was engineered by The Ken R. White Company, cooperating with Ideal's design engineers, to be constructed in two stages. The terminal has been in operation since 1961 for storing and shipping cement by barge, rail and truck. It has now become an integral part of the processing plant built around it. Also, the plant itself is designed so it can be doubled in capacity when demand requires it. The plant features such modern equipment as a computer for continuous control of the kiln, mills and cooler, an electrostatic precipitator that removes 99% of the solid matter from the exhaust of the kiln stack, a closed-circuit water cooling system and even a built-in vacuum cleaning system for housekeeping.

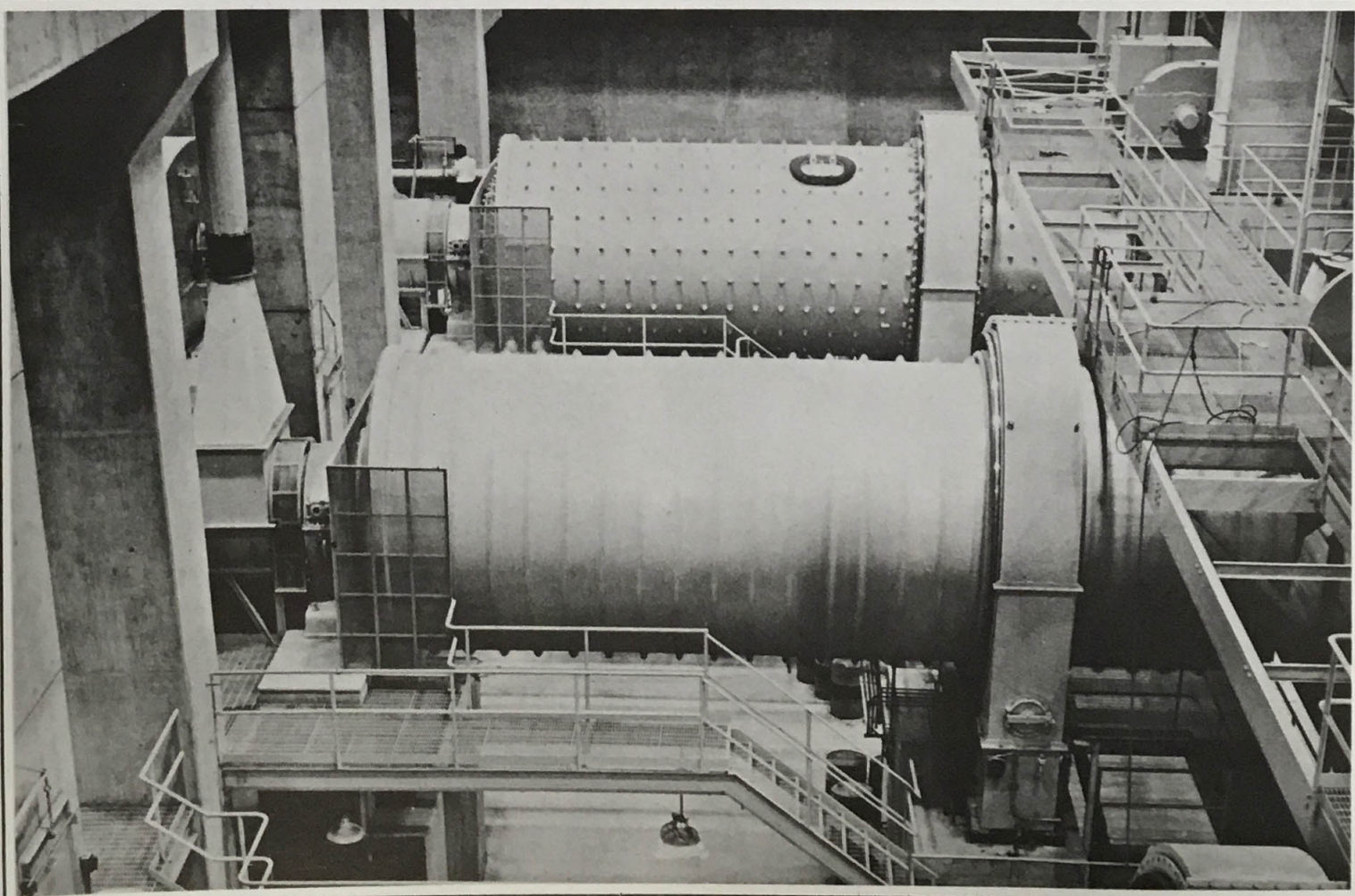
The massive 2.5 million barrel capacity wet-processing plant contains a 500-foot kiln, two finish mills, one raw mill and storage capacity for 70,000 tons of limestone.



The Ken R. White Company design staff makes extensive use of models in developing designs for industrial plants. Aerial view of Ideal Cement Company Castle Hayne Plant in North Carolina shows how closely actual construction followed plan developed in model (inset). This 3.5 million barrel plant went into production in 1963.

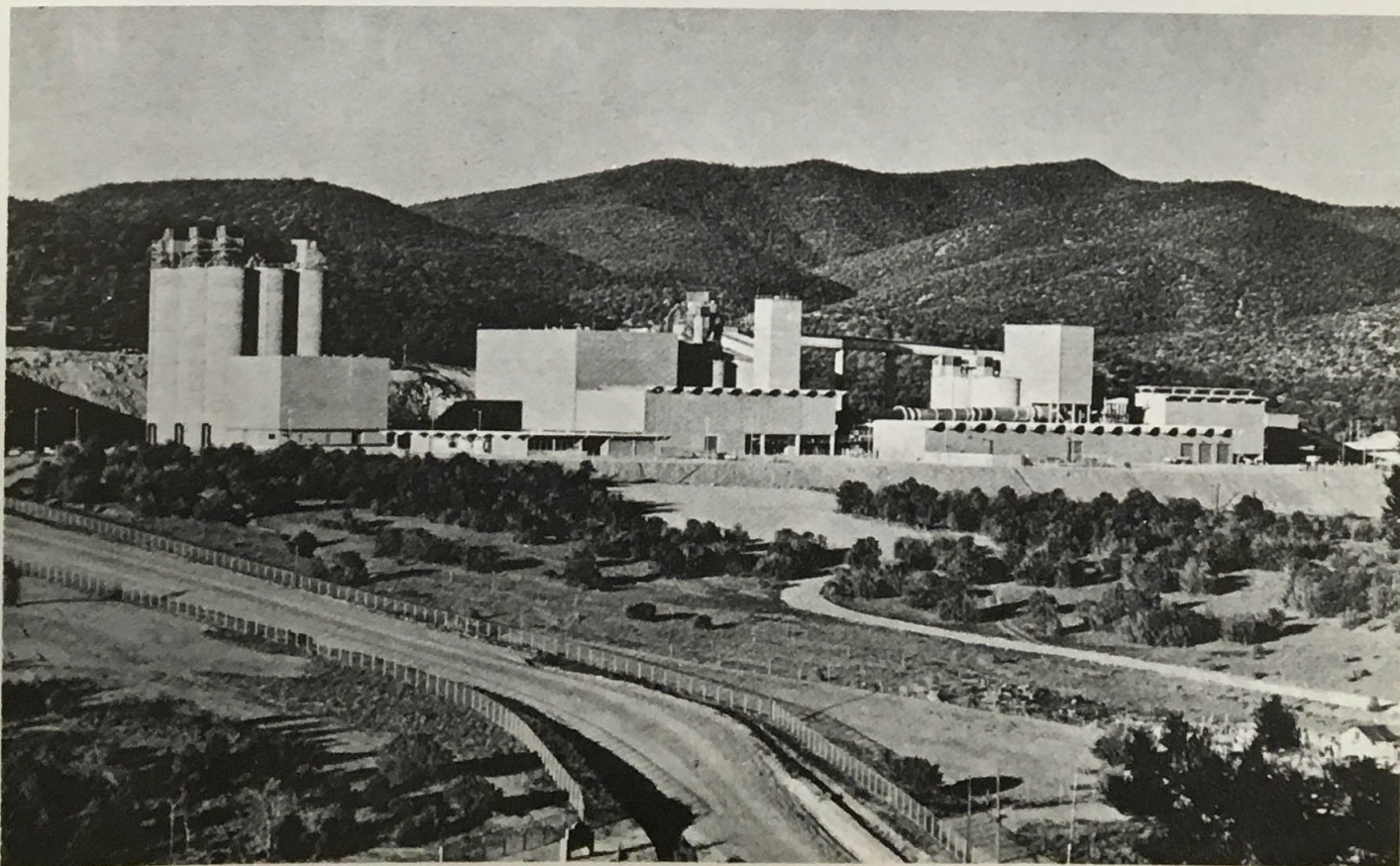


Part of the milling complex of the Castle Hayne Plant, North Carolina. The raw mill (rear) and the two finish mills are each 11 feet in diameter, 32 feet long, and individually driven by a 2,000 horsepower electric motor.



EFFECTIVE POLLUTION CONTROL is an outstanding feature of cement manufacturing plants designed by The Ken R. White Company.

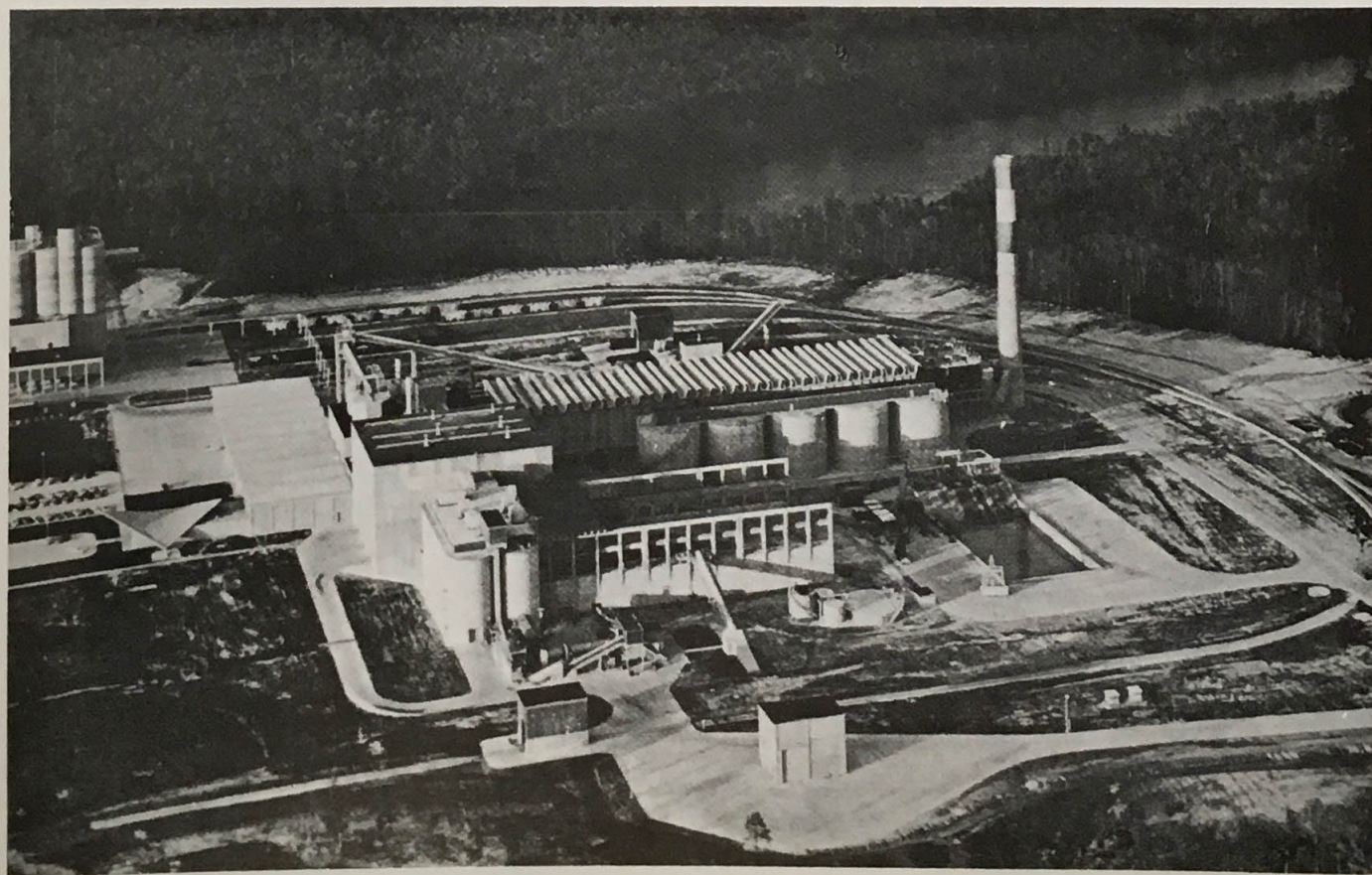
One of these, the Tijeras, New Mexico plant of the Ideal Cement Company, fully instrumented for automated control, won the Factory Magazine "Plant of the Year" award. It is one of the world's most modern pollution-free plants. Unlike most cement plants, it has no stack. The photograph below shows the plant in full operation.



Cement plants of the past were noted for the "dust plumes" discharged from their stacks ... and for their light gray, dust-covered surroundings.

The Castle Hayne, North Carolina plant, designed by KRW for the Ideal Cement Company, presents no such problems. This full-operation photograph attests to the effectiveness of the KRW-designed dust collection systems.

In addition to PREVENTING air pollution through its complete plant designs, The Ken R. White Company provides assistance in CORRECTING air pollution problems in existing plants.





INDUSTRIAL PROJECTS BY THE KEN R. WHITE COMPANY

Cement Plant; Tijeras, New Mexico; Ideal Cement Co.

Laboratories; Albuquerque, New Mexico; Atomic Energy
Commission

Missile Assembly Building; Colorado; U.S. Air Force

Liquid Oxygen Plant; Colorado; U.S. Air Force

Cement Terminal; Seattle, Washington; Ideal Cement Co.

Cement Storage and Packhouse; Tampa, Florida; Ideal Cement Co.

Cement Storage Center; Trident, Montana; Ideal Cement Co.

Missile Service Shops; Utah; U.S. Air Force

Cement Terminal; Superior, Nebraska; Ideal Cement Co.

Clean Rooms Shop; California; U.S. Air Force

Cement Mill Expansion; Tulsa, Oklahoma; Dewey Cement Co.

Cleaning and Plating Facility; Rocky Flats Plant; Atomic
Energy Commission

Cement Manufacturing Plant; Castle Hayne, North Carolina;
Ideal Cement Co.

Cement Storage and Distribution; West Palm Beach, Florida;
Ideal Cement Co.

Meat Packing Plant; Brush, Colorado; Sigman Meat Co.

Missile Service Shops; Utah; USCE

Cement Storage and Distribution; Portland, Oregon, Ideal
Cement Co.

Meat Packing Plant; Greeley, Colorado; Monfort of Colorado

Crushing Plant; Ada, Oklahoma; Ideal Cement Co.

Truck-Rail Terminal; Calvert, New Mexico; Ideal Cement Co.



Industrial Projects, continued

Research and Development Building; Denver, Colo.; Colorado Fuel and Iron Corp.

Meat Processing Plant; Cedartown, Georgia; Shurtenda Steaks

Cooler Dust Collection System; Ravena, N.Y.; Atlantic Cement Co.

ANCILLARY CAPABILITIES

ANCILLARY CAPABILITIES



ENVIRONMENTAL IMPACT STUDIES

Concern for the preservation of our environment has grown rapidly in recent time. This concern has manifested itself in increasing attention to the side effects of every conceivable type of developmental project until now what were once simple processes of engineering and architectural design have now become detailed studies of the possible short- and long-term side effects of each project on our environment.

Design now requires that all facets be considered - technical, aesthetic, economic, social and environmental. This requires a team, including experts of many diverse specialities; experts who work together frequently...objective experts who understand each other and appreciate each others' problems and objectives.

The National Environmental Policy Act of 1969 requires that the program for any Federally-funded construction program shall:

"Include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

- (i) the environmental impact of the proposed action,
- (ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,
- (iii) alternatives to the proposed action,
- (iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and
- (v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented."

The Ken R. White Company maintains the staff required to conform to the requirements of this act.

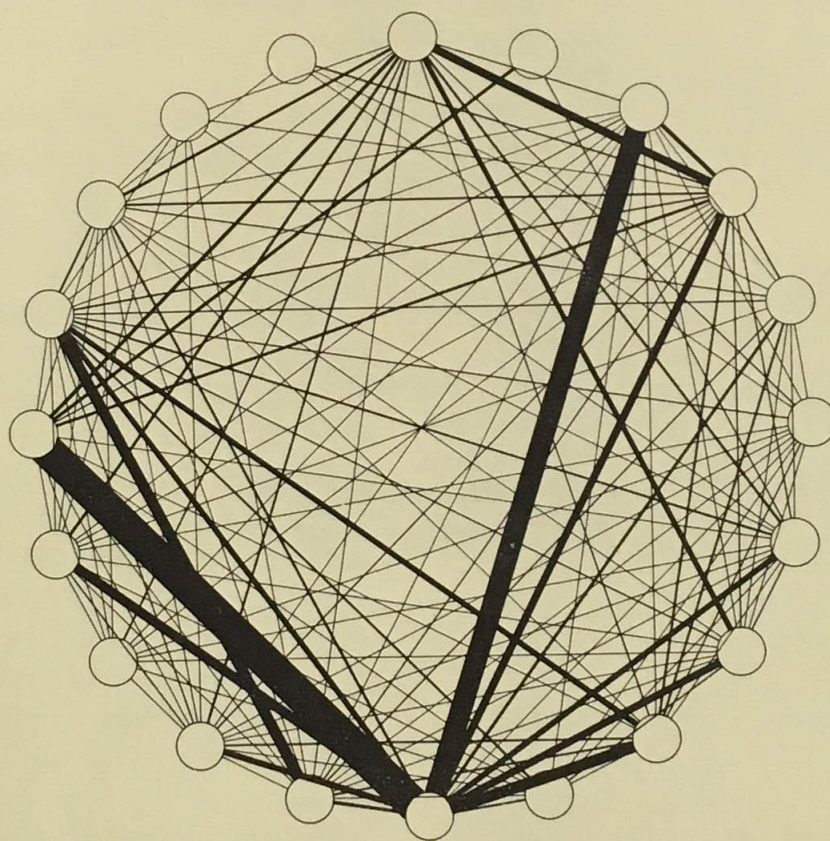


PROPERTY VALUATIONS

Appraisals and valuation analyses are a regular part of the services furnished by The Ken R. White Company. Fully qualified professionals are maintained on the staff, and added capabilities are available through the use of consultants for special projects.

Personnel on the staff of The Ken R. White Company have been responsible for appraisals of properties of all types including vacant land for subdivision purposes, commercial and industrial properties, and special-use properties. The presence on the staff of a member of the American Institute of Real Estate affords the opportunity for close coordination between the designers and the site developers in the optimization of land utilization.

PRE-ARCHITECTURAL SPACE STUDIES



THE KEN R. WHITE COMPANY



**KRW OFFERS SPACE UTILIZATION
AND FACILITY PLANNING SERVICES TO
CITIES, COUNTIES, SPECIAL DISTRICTS,
AND STATE GOVERNMENTS FOR:**

Civic and Governmental Centers
City Halls
County Courthouses
State Facilities
Administrative Offices
Community Centers
Health Care Facilities
Police Buildings
Detention Facilities
Fire Stations
Training Facilities
Corporation Yards
Service Centers
Cultural Centers
Libraries
Convention Centers
Sports Arenas
Auditoriums
Communications Buildings
Data Processing Centers

*Cover schematic shows movement of personnel
within a governmental building complex.*

PRE-ARCHITECTURAL SPACE STUDIES

New city, county and state facilities represent major public investments. With construction costs climbing between 10 and 12 percent a year and the cost of borrowed funds rising at an even greater rate, the need for effective planning and programming of new government buildings is clearly evident.

Planning new public facilities cannot be considered a design problem alone. The architect designs a building from space parameters provided by his client. Setting these guidelines requires attention to a series of practical considerations, such as the jurisdiction's growth prospects; projected levels of personnel required to provide governmental services; the organization required to provide these services effectively; employee productivity levels; the size and type of facility needed to house personnel over the short-term and long-term; the type of equipment necessary to provide required services; the type of building needed for most effective and economical operations; and the cost and means of financing development. The costs of such a space utilization program are extremely modest when amortized over the 40- to 50-year life span of the building.

Often the architect is forced to design a costly complex of facilities based on space estimates developed by local management that can spare only part-time efforts from already crowded work schedules. As a result, expensive modifications are frequently found necessary to meet functional requirements. Pre-architectural space planning by trained and experienced facility planners provides an

effective link between the architect and the client that will pay for itself many times over. KRW planners have the training and experience required to program local government space needs ranging from city hall, and county and state administrative facilities to service center operations and such specialized buildings as police and fire stations, detention facilities, parking garages, auditorium-convention centers, health care facilities, and airport terminals.

Local government building complexes, while different in each case, have basic functional similarities. KRW staff experience on a wide variety of governmental facilities, together with staff training in local government organization, provides clients with a background seldom found within their own staffs. This combination is fundamental to effective space studies planning. The planner must be familiar with local government operations in order to determine future space requirements in terms of present and projected levels of service. Equally important, he must be able to translate these requirements into a usable form to the client's architect. Further, he must specify the type of constructions that is most appropriate for client needs and be able to estimate its general cost for bond election purposes. Finally, he must be familiar with the methods available to finance new facility construction.

TYPICAL RESEARCH PROGRAM

Facility planning and space utilization programs consist, typically, of the six major research tasks summarized as follows:

1. Policy Formulation and Operations Review

Planners and client establish basic space and facility goals and develop study parameters and guidelines for subsequent research. Policy topics include probable changes in organization structure, addition of new services, departmental consolidations or separations, expansion or contraction of existing services, and examination of alternate actions required in the event of policy modifications.

2. Growth Projections

Service area population is projected as a precedent to forecasts of future manpower requirements. Personnel needs are analyzed by functional component according to guidelines established in Task 1. Proposed organization and personnel changes are examined in relation to the span of operational control and interdepartmental communication needs. Potential effects of increased productivity, automation, use of contract rather than staff services, reduction of work force and similar factors influencing personnel growth are studied. Short-term (5- to 10-year) and long-term (20- to 40-year) personnel projections so developed provide the base point for estimating future space needs.

3. Space Forecasts

This task includes analysis of principal job functions, determination of workspace standards, and projection of future space needs. Departmental space requirements are developed through detailed personal interviews. Interview results are compared with space utilization standards developed from KRW experience, and adjustments are made. Space projections are then developed in terms of usable square feet and gross floor area as a basis for measuring efficiency of the final building design.

4. Interdepartmental Relationships

Building efficiency is not solely a function of space. Effective facility planning aims at reduction of time losses in work flow between departments and divisions. Efficiencies are also achieved by proper location of operating units. Functional relationships are established through surveys of personnel movement and numbers of public visits. These investigations provide the basis for recommendations on intra-building department placement and centralization and/or decentralization decisions.

5. Facility Development Program

Policy guidelines, personnel projections, space forecasts, interdepartmental relationships, and supporting site requirements are synthesized into a space utilization and facility development program in this phase of research. Site location, the impact of proposed development on the environment surrounding the site, and the needs for supporting facilities form an integral part of final development program proposals.

6. Financing and Implementation

Alternate methods of financing proposed development are examined, and recommendations are submitted on the procedures considered most appropriate for financing the facility improvement program. Preliminary development cost estimates suitable for bond election purposes are prepared in consultation with the client's architect on request. These estimates include costs of site acquisition, site preparation, landscape treatment and off-street parking, as well as building costs.

EXAMPLE PROJECTS

The following are recent examples of KRW planning staff assistance to local and state governments in the development of forward-looking and economic public facility programs.

City Hall

A small city grew in population from 6,000 when first incorporated to nearly 25,000. Facilities that were adequate for 20 employees ten years earlier were totally inadequate for a present staff over 100. Entire departments were forced to lease commercial space on an interim basis. Management and the City Council recognized the inefficiency of the operation and retained KRW facility planners to plan a new Civic Center. Investigations revealed that current needs were 65 percent higher than available space and that by 1980 and 2000, needs would increase 220 and 250 percent. The program as recommended was approved by the community's voters and is being constructed. The Civic Center, which also includes a new County Library, forms an integral part of the community's plan for a revitalized Central Business District.

Municipal Service Center

A medium size municipality found its service operations for various elements of city equipment were fragmented among three departments. KRW facilities planners analyzed service requirements, determined short- and long-term space needs, evaluated consolidation of these functions in a single facility, and prepared specific layouts and plans for a unified service center.

County Operations

A county found it was frequently being asked to change the internal configuration of its departmental workspace as well as to build new facilities. KRW facility planners were asked to investigate space utilization in existing facilities and to prepare a long-range facility development program. Recommendations included short-term space allocations by functional component and new facility development to meet the long-term needs of all county operations.

Governmental Center

A city and county proposed joint Civic Center development on land to be cleared by a major urban renewal project. Benefits to be gained from inter-agency proximity were sufficient to warrant including key federal and state buildings to form a comprehensive Governmental Center. Facility planning assistance included determination of space requirements, development of a site plan, and estimation of project costs. On this assignment facility planners worked directly with project architects throughout the planning and design program.

State Facilities

Rapid increases in employment at five metropolitan locations forced a state government to lease millions of square feet of commercial office space. KRW space planners were retained to determine methods of achieving economies in the use of existing space, to forecast future space needs, to compare costs of leasing and building for future space needs, and to recommend an appropriate course of action.

REPRESENTATIVE CLIENT LIST

Office of Emergency Planning
 Department of Interior
 Department of Agriculture
 Agency for International Development
 Federal Aviation Agency
 General Services Administration
 National Aeronautics and Space Administration
 Space Nuclear Propulsion Office
 Atomic Energy Commission
 National Center for Atmospheric Research
 Yuma Test Station, Arizona
 Fitzsimons General Hospital, Colorado
 Colorado National Guard
 U.S. Navy
 U.S. Air Force Academy
 U.S. Air Force
 U.S. Army Corps of Engineers
 Royal Government of Afghanistan
 Government of Ceylon
 Government of Bolivia

Arizona Highway Department
 Colorado Department of Highways
 Florida State Road Department
 Hawaii Department of Transportation
 Idaho Department of Highways
 Montana State Highway Commission
 Nebraska Department of Roads
 Nevada Department of Highways
 Utah Department of Highways
 Washington Department of Highways
 Denver Board of Water Commissioners
 Denver Urban Renewal Authority
 Denver Regional Council of Governments
 Metropolitan Denver Sewage Disposal District No. 1

Adams County, Colorado
 Arapahoe County, Colorado
 Bent County, Colorado
 Douglas County, Colorado
 Douglas County, Nevada
 Fremont County, Colorado
 Garfield County, Colorado
 Jefferson County, Colorado
 Lake County, Montana
 Moffat County, Colorado
 Pinal County, Arizona

Arvada, Colorado
 Aurora, Colorado
 Boulder, Colorado
 Canon City, Colorado
 Colorado Springs, Colorado
 Craig, Colorado
 Denver, Colorado
 Englewood, Colorado
 Glendale, Arizona

Lafayette, Colorado
 Lamar, Colorado
 Littleton, Colorado
 Longmont, Colorado
 Miles City, Montana
 Moab, Utah
 Pagosa Springs, Colorado
 Parker, Arizona
 Phoenix, Arizona
 Polson, Montana
 Prescott, Arizona
 Pueblo, Colorado
 Rangely, Colorado
 Raton, New Mexico
 Rocky Ford, Colorado
 Trinidad, Colorado

Carson College, Carson City, Nevada
 Cleveland, Ohio Bd. of Education
 Colorado Mountain College
 Colorado School of Mines
 Colorado State University
 Colorado University
 Denver, Colorado School Dist. No. 1
 Jefferson County School Dist. R-1
 Trinidad School District No. 1

Adolph Coors Company
 American National Bank
 Atlantic Cement Company
 Blue Cross-Blue Shield of Colorado
 Boise Cascade Building Company
 CF&I Steel Corporation
 California Oil Company
 Calvary Temple Church, Denver, Colorado
 Capitol Cement Company
 Continental Manufacturing Company
 Denver Brick and Pipe Company
 Dewey Portland Cement Company
 El Paso Natural Gas Company
 Federal Reserve Branch Bank, Denver

Gates Rubber Company
 Hardee Foods
 Ideal Cement Company
 LTV Recreation Development, Inc.
 Martin Company, Denver
 Martin-Marietta Company
 Midwest Natural Gas Company
 Minneapolis Honeywell
 Monfort Packing Company
 Monolith Portland Midwest Company
 Phillips Petroleum Company
 Robert R. Nathan Associates, Inc.
 Samsonite Corporation
 Sigman Meat Company
 Thompson-Ramo-Wooldridge



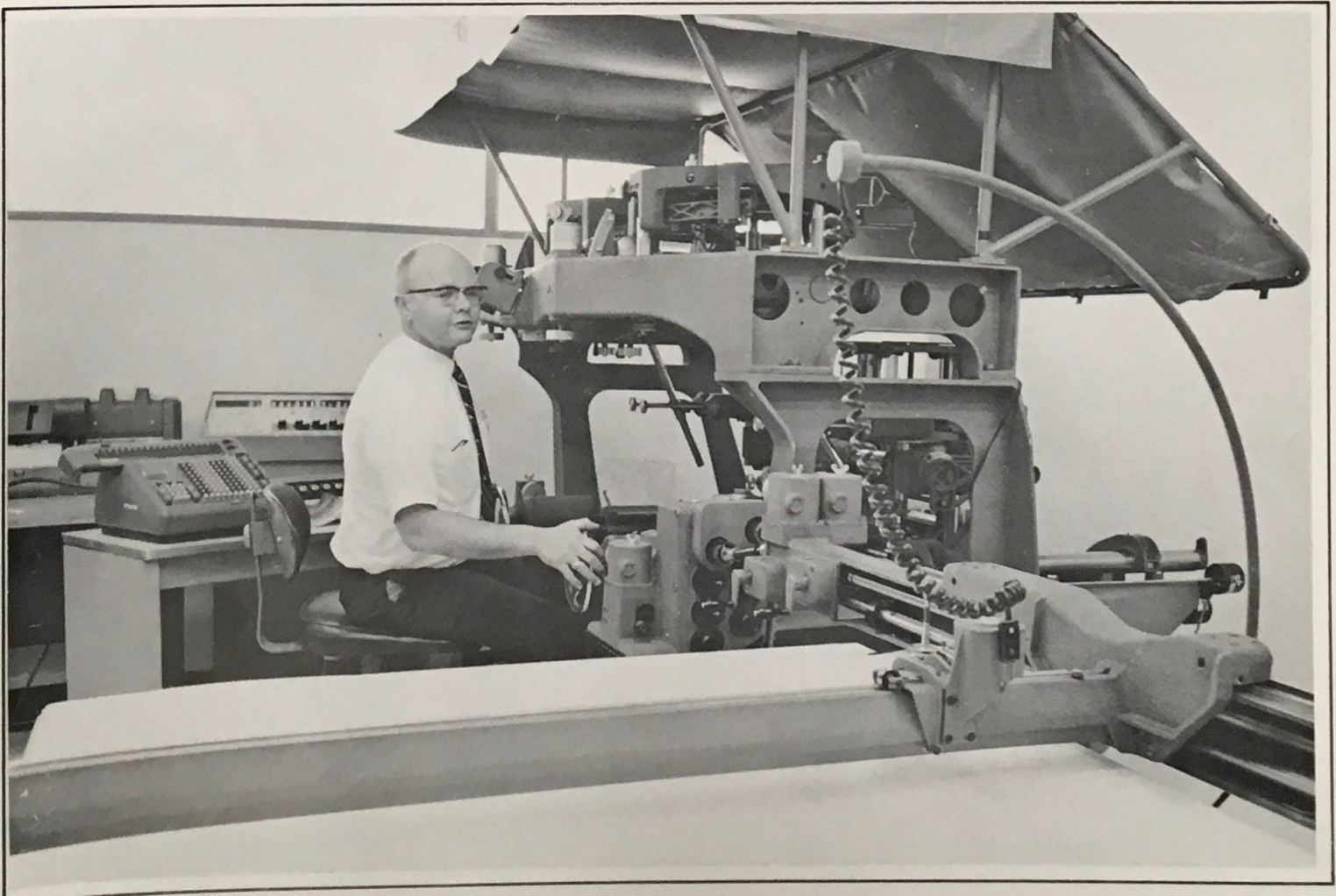
THE KEN R. WHITE COMPANY 3955 East Exposition Avenue, Denver, Colorado 80209
 Tel. 303/744-1861 Cable Address: KENWHITE, Denver

BRANCH OFFICES: Boulder, Colorado / Scottsbluff, Nebraska / Helena, Montana / Yakima, Washington
 Salt Lake City, Utah / Honolulu, Hawaii / Phoenix, Arizona / Coral Gables, Florida / Washington, D.C.



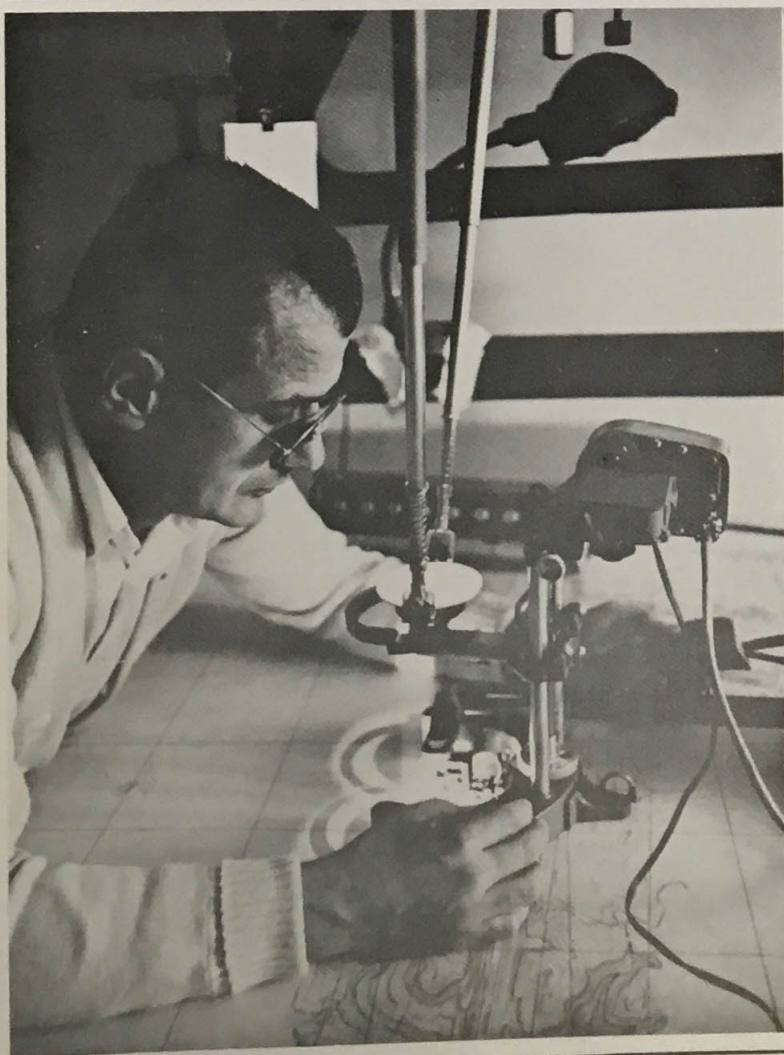
A complete photogrammetric service saves time and money for government and industry. Highway planning and surveying ... city planning ... mining exploration ... water resource surveys ... pipe line and transmission routing ... tax maps ... site selection ... industrial projects ... forestry and geological studies ... these are just a few of the applications that have been made of the complete photogrammetric services of Falcon Air Maps Division of The Ken R. White Company. The Division's equipment includes four Kelsh plotters and a Wild A-7 Autograph. Auto-trol digitizers are used to obtain and transfer data directly from stereo plotters to input material for electronic computers, which aid in rapid and accurate analysis of data. Falcon Air Maps has worked with many levels of government as well as with private industry. Photogrammetry is offered either as a phase of an overall project or as a special service.

A photogrammetrist is shown below at Falcon's Wild A-7 Autograph stereo plotter, with Auto-trol digitizer and key punch equipment for digital output of X, Y and Z coordinates onto cards for computer processing. This equipment provides high speed calculation of earthwork quantities in highway location and design.

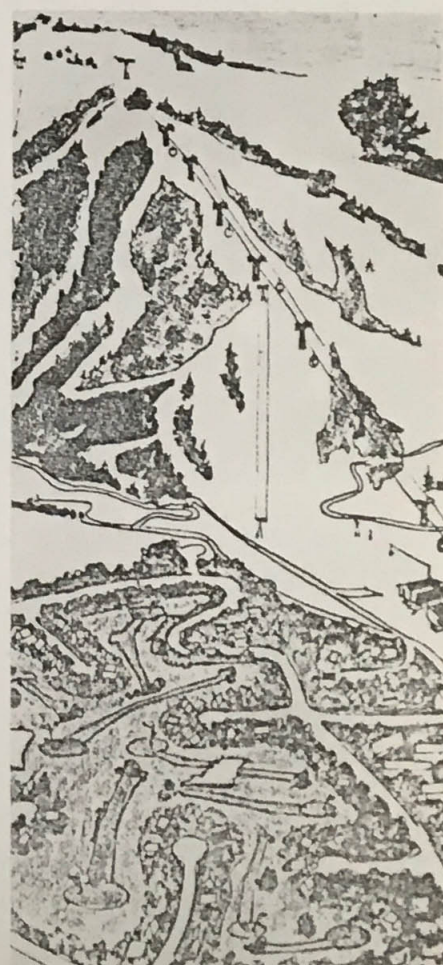
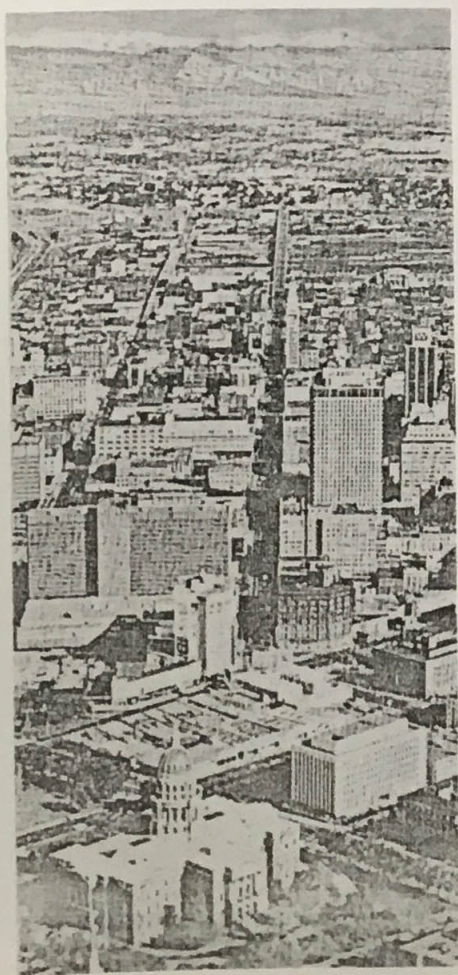


The Kelsh plotter shown below is one of several in use in the Falcon Air Maps laboratories. Maps may be drawn directly using this instrument ... or, as is shown here, it may be used with electronic encoders and the Autotrol digitizer to produce computer data directly.

Final maps are produced in many forms ... from pencil originals to inked tracings or large photographs. For highest quality reproduction, Falcon's skilled cartographic draftsmen scribe (or ink) all contours and other detail on a dimensionally stable plastic base.



Land planning and economic feasibility studies for residential subdivisions, mobile home parks and total communities, recreation complexes, tourist and visitor facilities -- pre-architectural space planning for commerce, industry and government -- urban development and redevelopment policy recommendations -- economic base analyses -- land use, housing, circulation, utilities and recreation analyses -- continuing planning assistance to local governments -- social, economic and environmental impact analyses of proposed highway and other major public construction projects -- these activities are all within the scope of The Ken R. White Company's Department of Planning.



In these activities, the Planning Department works closely with members of other KRW departments and with personnel from our URS affiliate companies, to form a team including the best expertise available to analyze and solve multi-disciplinary problems. The projects listed below -- either completed or underway -- are representative of such cooperative efforts:

Land use and economic planning for development of a major ski and year-round recreation complex in Colorado

Site designs for several mobile home parks in Arizona, Colorado and Florida

Feasibility study of modernizing and enlarging the restaurant and museum facilities of a major tourist attraction near Denver, and of improving access to the attraction by installation of an aerial tramway

Pre-architectural space planning for a major new Denver office building to accommodate a rapidly growing service institution

Comprehensive development plans and economic base studies for several communities and counties in the Rocky Mountain States

Planning and administration of the engineering and architectural services necessary to renew and revitalize a deteriorating residential neighborhood, under provisions of the Neighborhood Development Program

Continuing planning assistance in matters of rezoning requests, subdivision plat reviews, and development policies and procedures for a Denver area county now beginning to feel the pressures of urban expansion

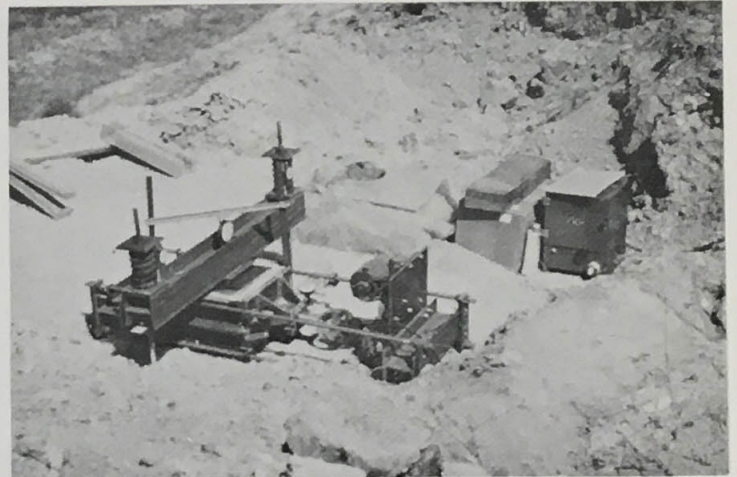
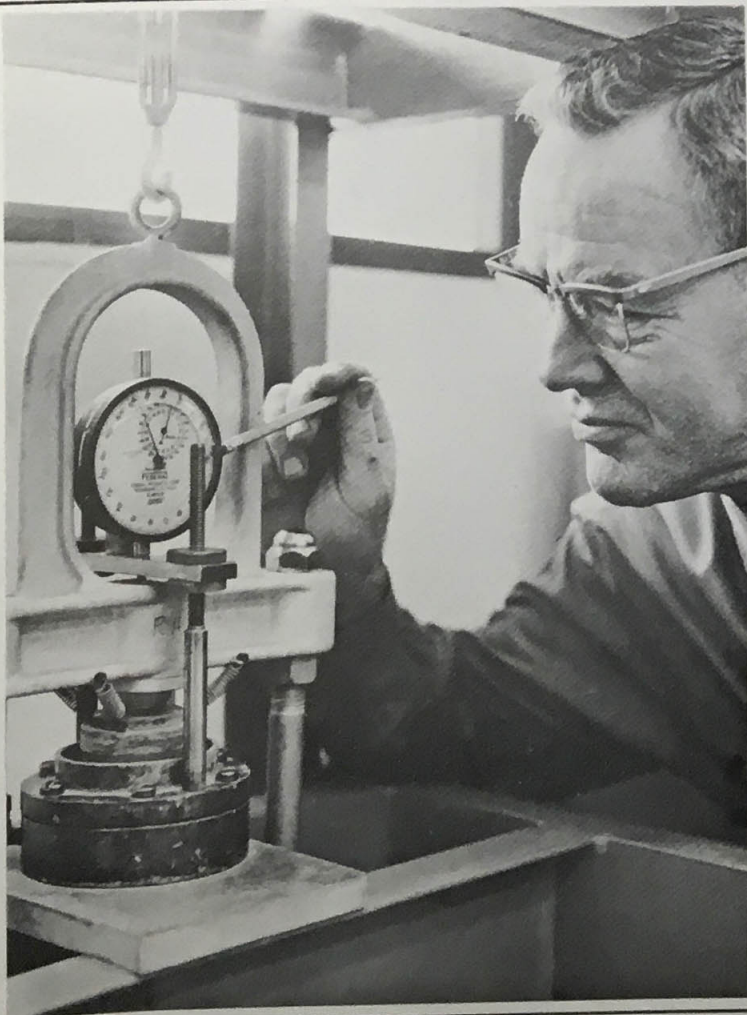
Analyses of the impacts of alternate freeway locations in Colorado, Nebraska and Florida upon existing and future land use patterns, recreation, agriculture, tourism, and social and cultural values.



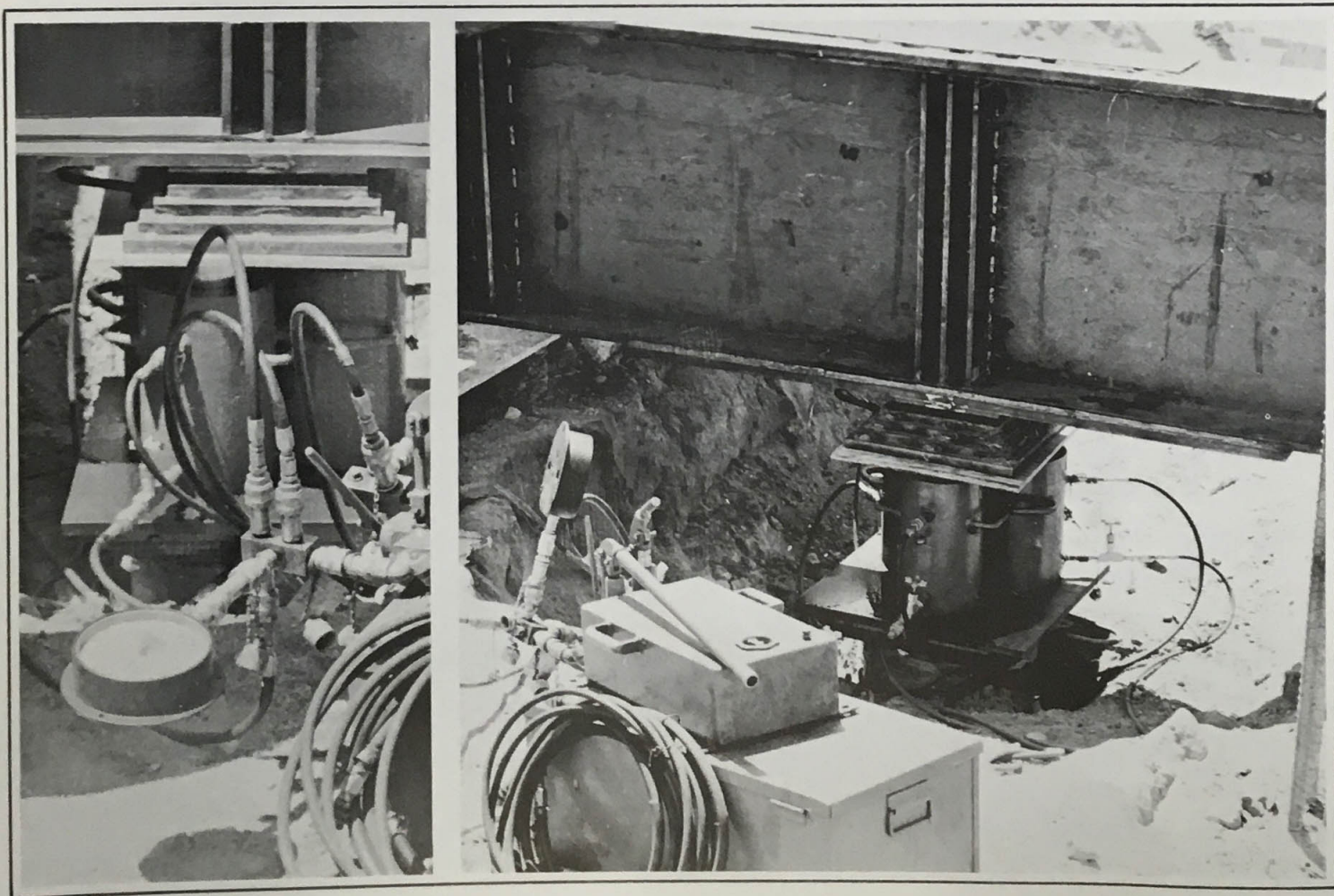
Complete Substructure Investigation ... field studies, in-situ testing, laboratory soils testing, borings, resistivity surveys, foundation design, flexible and rigid pavement design, landslide stabilization ... all are within the scope of services offered by Materials and Substructures.

A Division of The Ken R. White Company, M and S works as a part of the Company design teams on airports, highways, buildings, dams, sewerage systems, water supply and many other types of project.

A typical laboratory test shown at the left below uses a consolidometer to measure expansive pressure of clays, a step in the complete design of a building foundation. At the right, a large-scale in-situ shear test is performed as a step in determining a procedure for stabilizing a large slide area.



Shown below is a full scale load test on a caisson 70 feet long. The caisson was instrumented to measure load transfer to bottom and sides, and loaded to 600,000 pounds. This test established the highest bearing value ever used on the Denver Formation blue shale, for foundations of the Lincoln Tower Building in Denver.





COMPUTER CAPABILITIES

LANDSCAPE DESIGN

The Ken R. White Company's IBM 1130 computer is used extensively in design problems as a tool in the optimization of the final design. Landscape design services are provided to our clientele on an in-house basis by staff personnel with extensive experience and knowledge of local environmental factors. Where necessary, consultant help is obtained locally to provide more intimate knowledge of specific landscape design parameters. Landscape design portions of projects are closely coordinated with other disciplines involved in order to obtain optimum benefit from the available staff.



COMPUTER CAPABILITIES

The Ken R. White Company's IBM 1130 computer is used extensively in design problems as a tool in the optimization of the final design. With over 60 programs on hand, the computer and the supporting staff are prepared to handle all types of design problems from simple perimeter closures to complex analysis of storm hydrographs and critical path construction scheduling.

In addition to the design capabilities, the computer is used to monitor progress on jobs and to enable the Project Manager to control the job by exception. Design uses include analyses of work flow, traffic analysis, earthwork computations, and structural design.

CAPABILITIES OF AFFILIATES

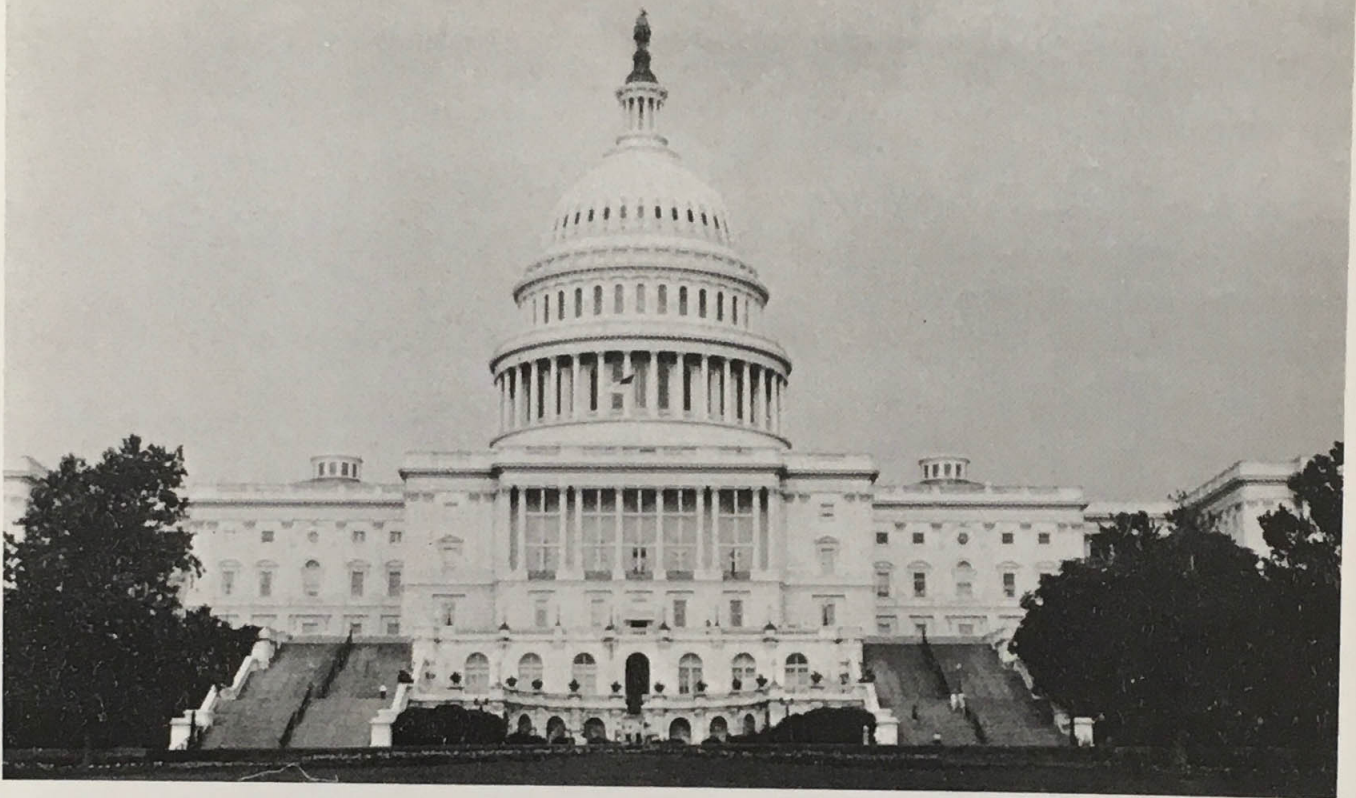


PRAEGER-KAVANAGH-WATERBURY

Praeger-Kavanagh-Waterbury is a well-known and highly respected engineering-architectural firm offering an unusually comprehensive professional experience in the design of a wide variety of projects including governmental facilities, industrial plants, schools, stadia, commercial and recreational facilities, special foundations, highways, bridges, utilities, and drainage systems.

Work for the U. S. Government has included the structural and foundation design for the renovation of the White House, in 1952, and the investigation of the feasibility of restoration of the West Central Front Wall of the U.S. Capitol, in 1970.

The firm has broad experience in the design of special structures to resist blast damage and provide maximum security. The staff of approximately 300 employees includes architects, engineers, planners, and construction management specialists. The firm has comprehensive professional experience in technical and economic feasibility studies, preliminary and final design, construction supervision and financial analysis for a variety of engineering projects.



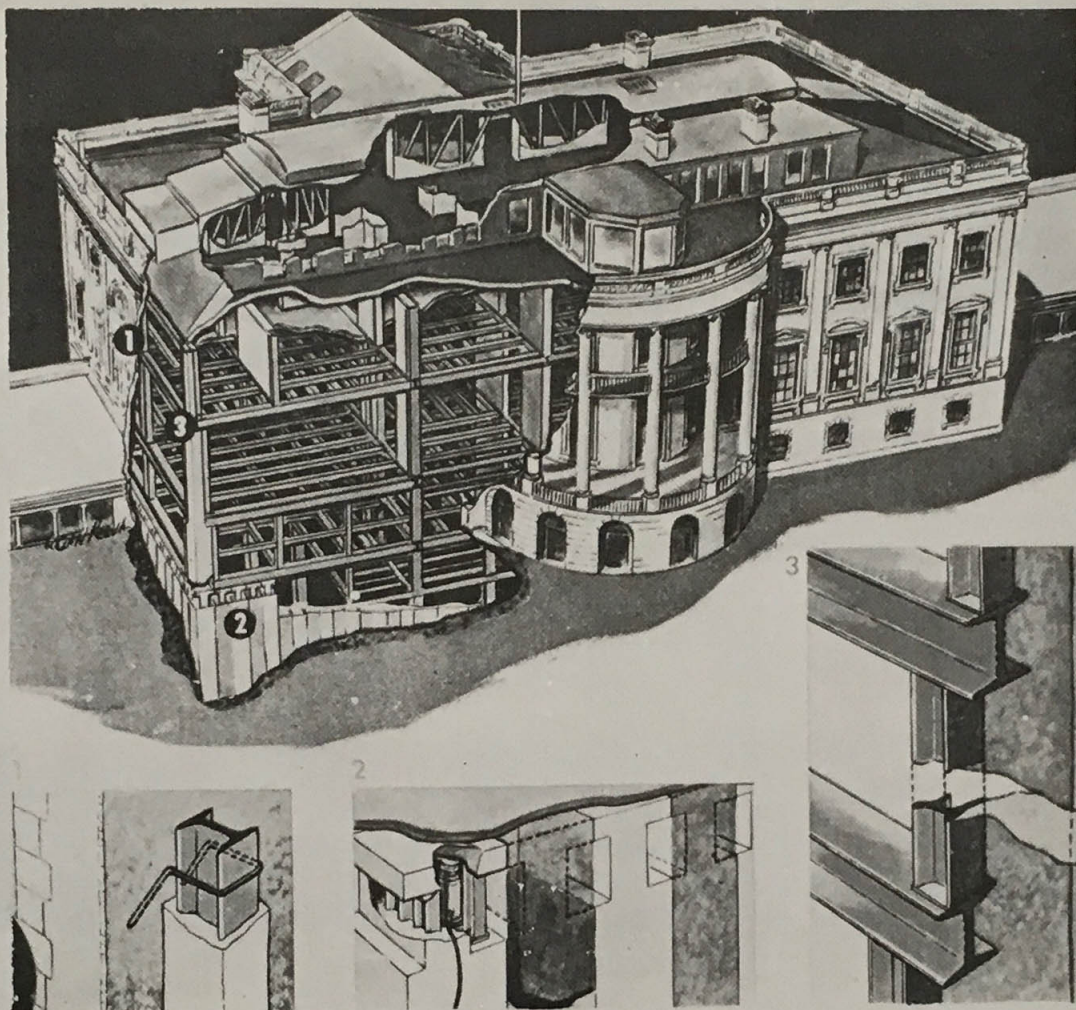
RESTORATION OF THE WEST CENTRAL
FRONT OF U. S. CAPITOL
Washington, D. C.

Client: Capitol Architect's Office

Praeger Kavanagh Waterbury was retained to evaluate the engineering feasibility of restoring the west central front of the U. S. Capitol Building. The west wall is the original exterior wall of the Capitol Building and as such is an important part of our national heritage.

The purpose of the study was to determine whether the feasibility of such restoration, without hazard to the safety of the structure and persons, to make the west central front sound and durable and preserve its aesthetic quality for the foreseeable future.

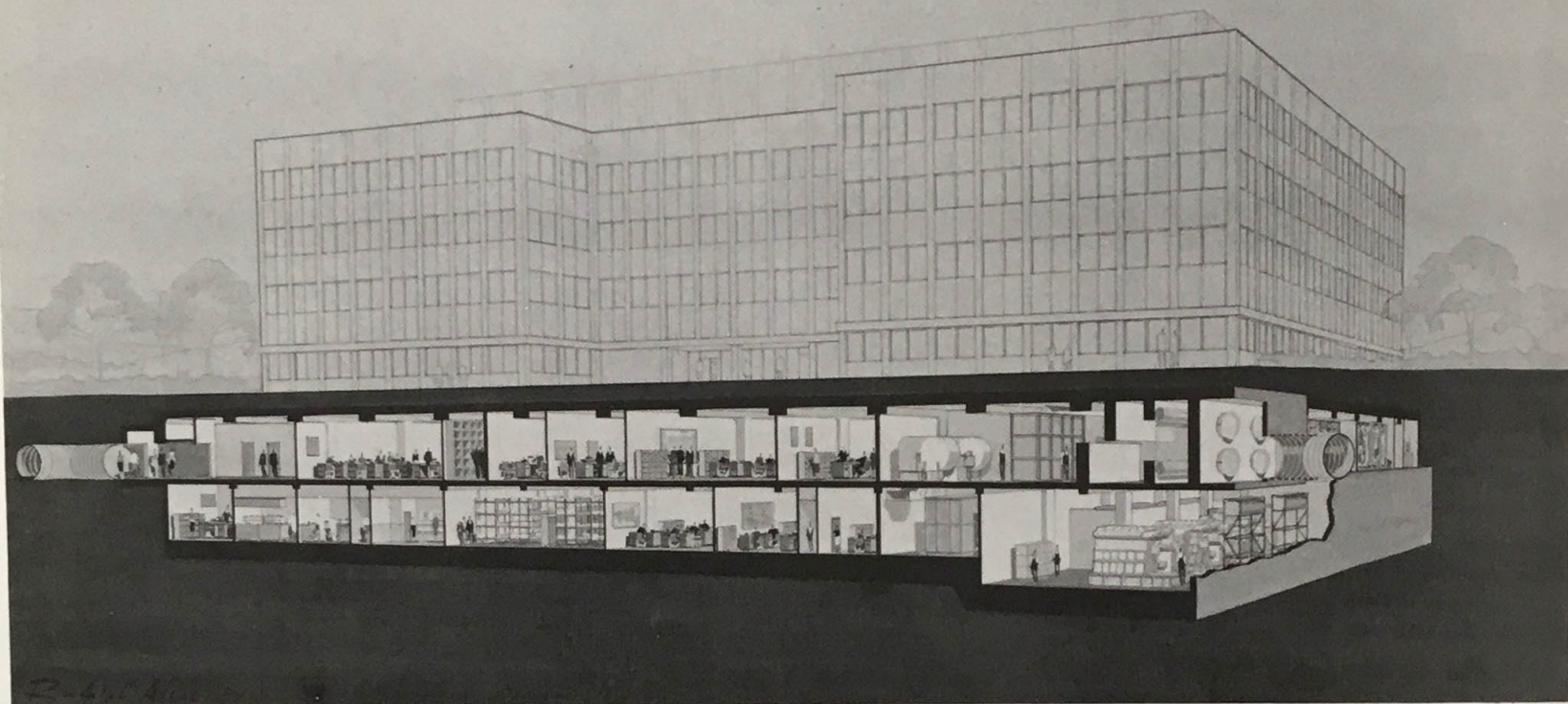
The work was under the direction of Captain Emil H. Praeger, who was consultant for engineering on the renovation of the White House completed in 1952.



RENOVATION OF THE WHITE HOUSE Washington, D.C.

Client: Commission on the Renovation
of the Executive Mansion

Captain E. H. Praeger served as consulting structural and foundation engineer on the renovation of the White House, completed in 1952. This critical project, to correct the then structurally weakened Executive Mansion, preserved intact the historic outer walls and placed the corrective construction within and below these walls.



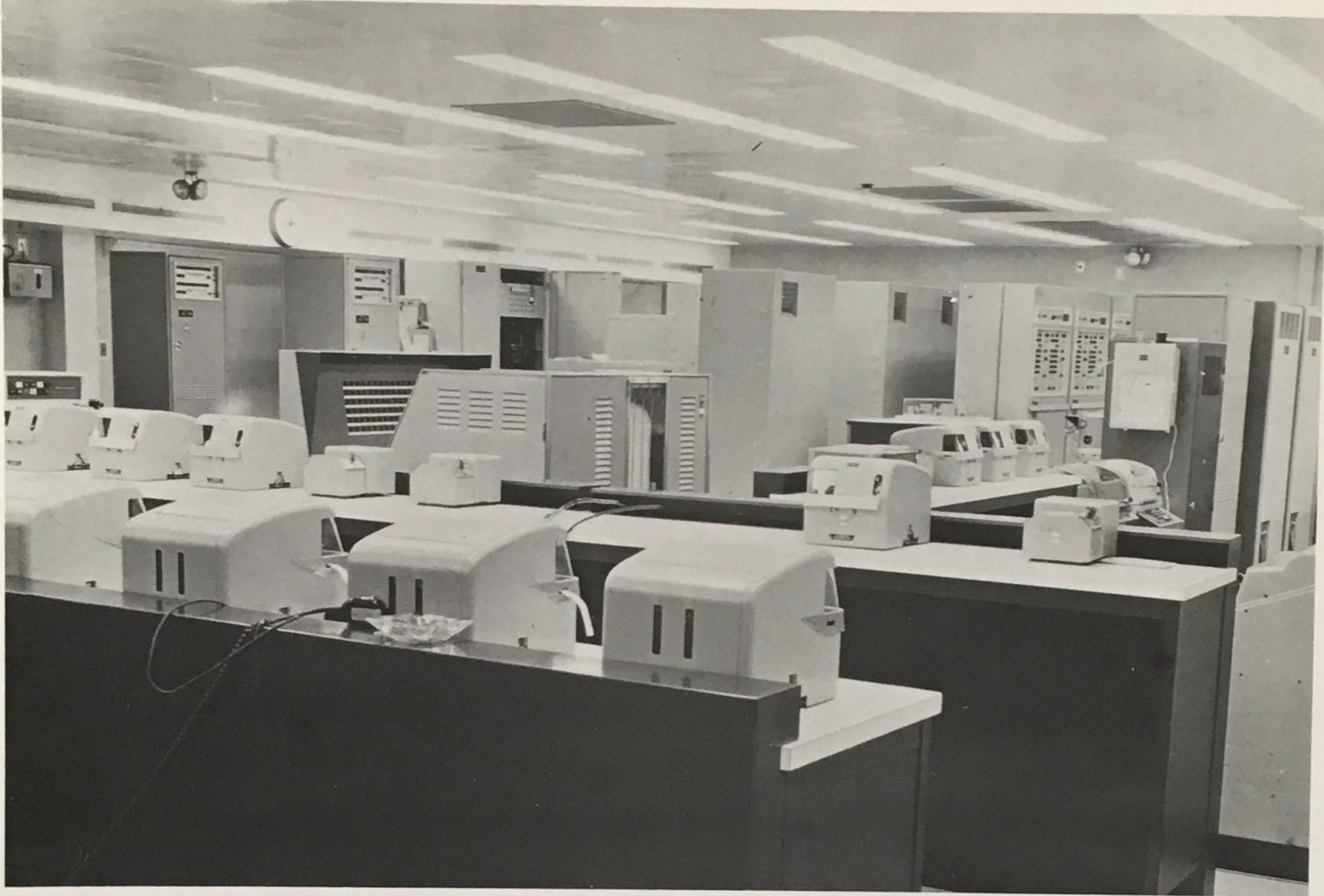
ALTERNATE SEAT OF GOVERNMENT
Albany, New York

Client: State of New York
Department of Public Works

Design, contract plans and specifications for a 2-story underground control center to house the government of New York State in the event of a nuclear attack. This structure serves as the foundation for the four-story New York State Office Building.

The reinforced concrete structure is buried below grade with 2-1/2 feet of earth cover over the roof. The hardened control center has a complete power plant, air conditioning system and CBR filtering system. Protection is provided against the effects of blast overpressure, ground shock, and initial and residual radiation effects of an atomic explosion.

Cost: \$3,200,000.



COMPUTER FACILITY
Rockleigh, New Jersey

Client: Trans World Airlines

An existing building was converted into TWA's new computer passenger reservation center following a feasibility study which considered the alternative of a new building. Conversion in this instance required a thorough interior redesign to incorporate a Burroughs D-830 computer and related support facilities. Included is a 750 KVA electrical no-break system and a standby-electrical generator installation of two 750 KW units. Design and Field Consultation.

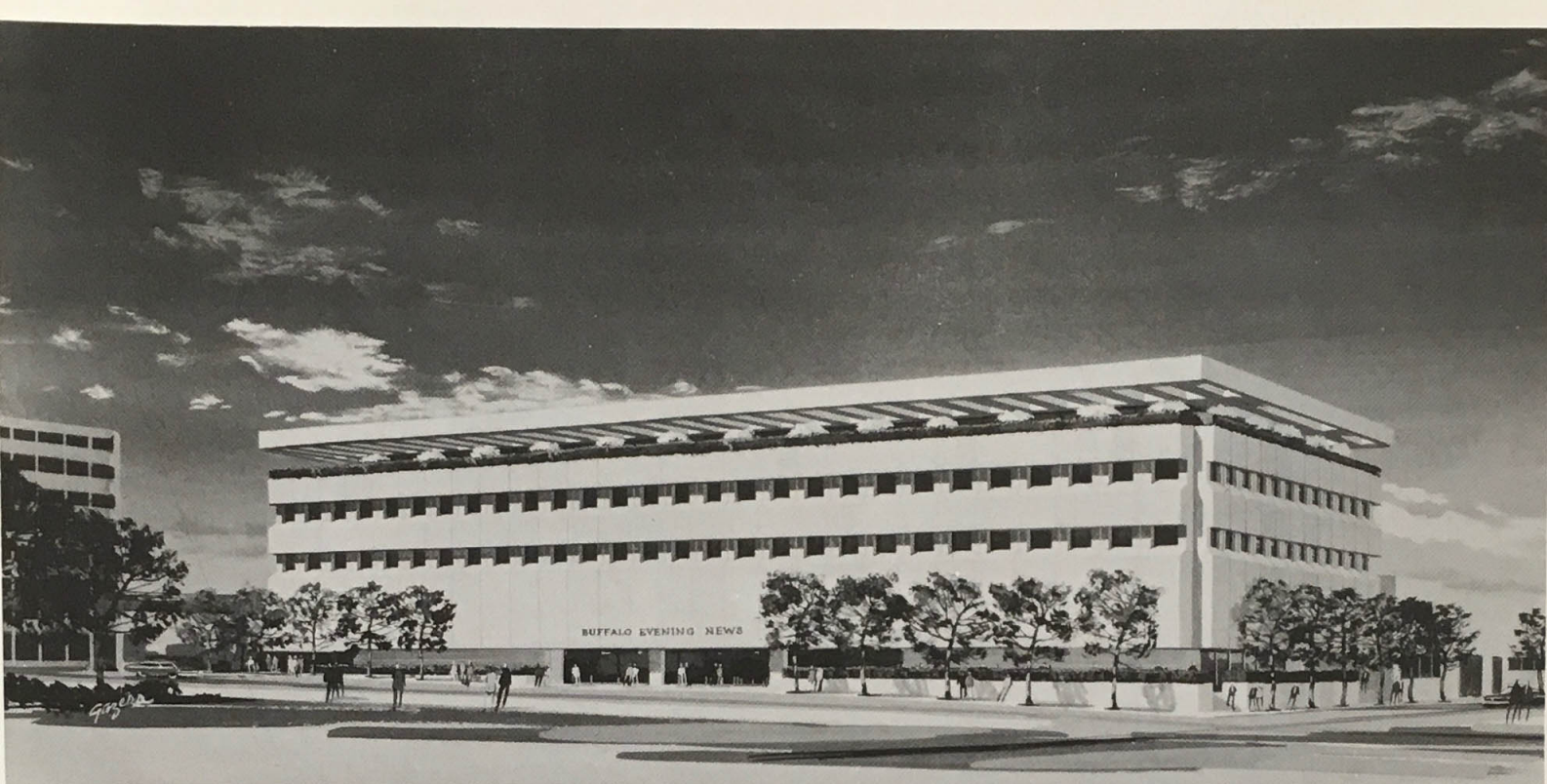
Cost: \$4,000,000.



AVIATION ACCESSORIES OVERHAUL BUILDING
U.S. Naval Air Station, Norfolk, Virginia

Client: U.S. Navy
5th Naval District

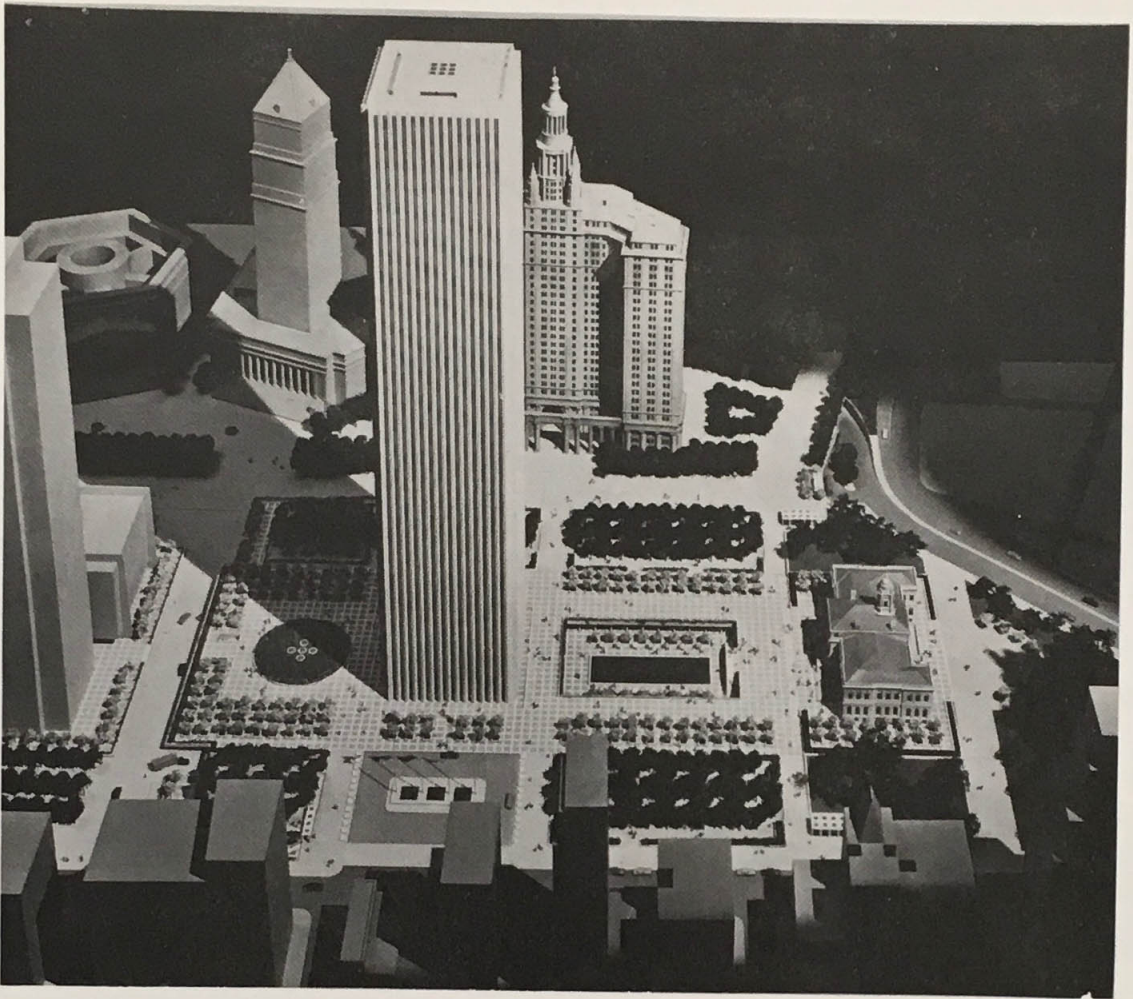
Design, contract plans and specifications for the major aircraft accessories overhaul shops at the Naval Air Station. The overhaul shops are enclosed under one roof in a building having a floor area of approximately 250,000 square feet. Cost: \$2,800,000.



BUFFALO EVENING NEWS PLANT ADDITION
Buffalo, New York

Client: Edward Durell Stone & Associates

The five-story addition to the Buffalo Evening News plant in Buffalo, New York incorporates concepts consistent with the current trend of systems designed buildings. Lightweight, high strength materials are used in the reinforced concrete, post-tensioned structural frame. The frame is constructed of both longitudinal and transverse folded plate boxes that act as duct work, plenum spaces and utility spaces for the mechanical and electrical systems. The underside of the boxes is the finished architectural ceiling. In addition, vertical shafts for stairs, elevators, and ductwork and other trades are utilized as columns for the building. The result is a completely integrated architectural, mechanical, electrical and structural system. Construction Cost: \$9,500,000.



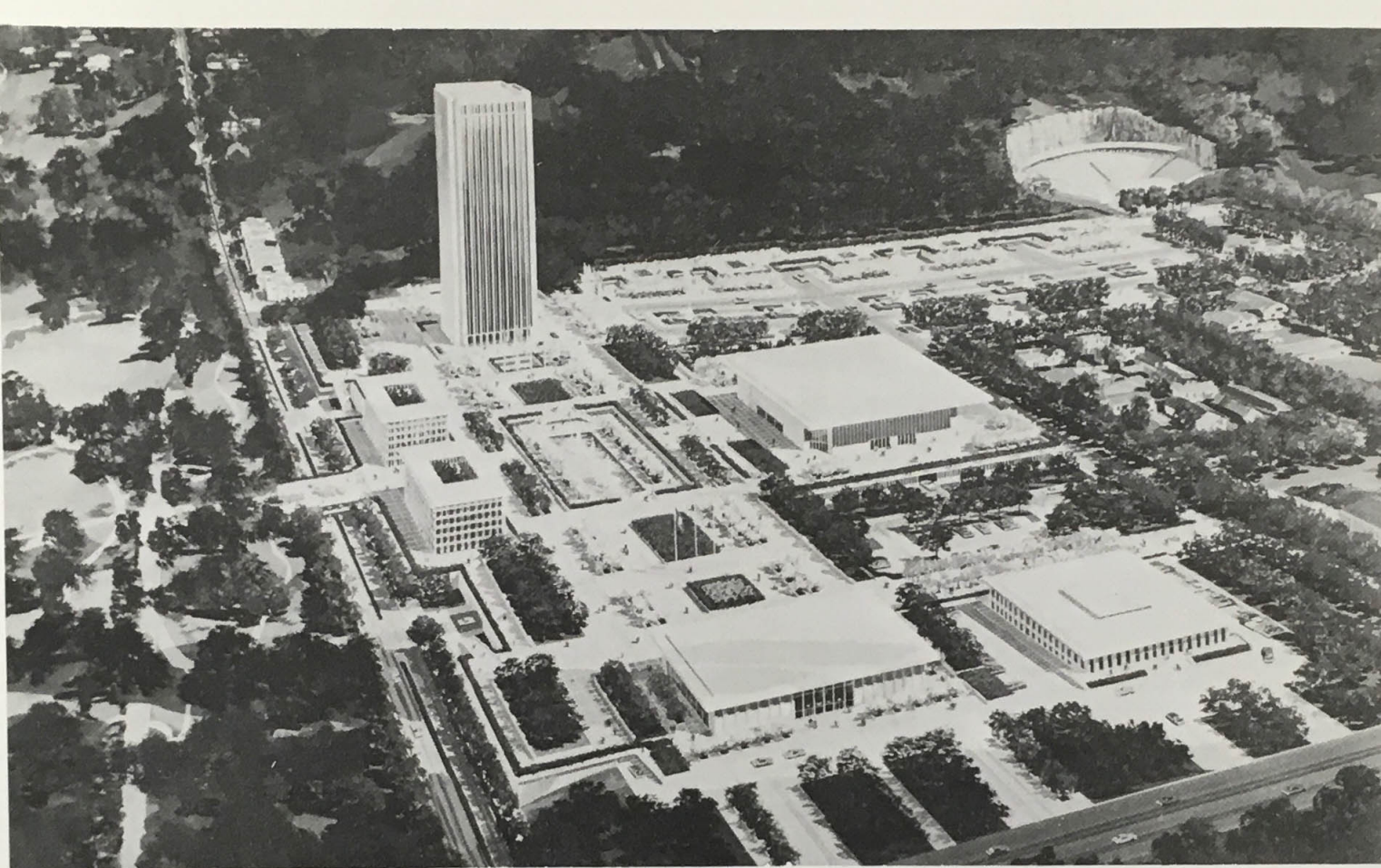
CIVIC CENTER
New York, New York

Client: City of New York
Department of Public Works

Structural engineering and foundation design for a landmark 54-story office building which will consolidate New York City executive and administrative offices. Four levels are planned for a plaza, concourse and garages. The tower will be free of columns from the central core to the exterior of the building, which will be enclosed with a precast concrete facade.

Cost: \$102,000,000.

*Under subcontract to joint venture Edward Durell Stone and Eggers & Higgins.



CAPITAL PLAZA DEVELOPMENT
Frankfort, Kentucky

Client: PRELIMINARY DESIGN: Edward Durell Stone
Client: FINAL DESIGN: Lee Potter Smith, Pritchett,
Hugg & Carter

The Capital Plaza is a multi-million dollar development in the downtown section of Frankfort. Overlooking and dominating the Plaza is a 28-story office building which will house various agencies of the State Government. The project also includes a Convention and Sports Center. Scope of engineering services includes structural and foundation engineering of the office tower, a two story garage and the plaza structure. Engineering services were also provided for the Convention and Sports Center, which has a 7,000 seat arena with a 240 foot square space truss roof. Cost: \$37,000,000.

L4 CABLE JUNCTION BUILDINGS

Client: American Telephone and Telegraph Co.
Long Lines Department

Two-story below-ground reinforced concrete structures were designed to accommodate long lines communications facilities. The buildings include approximately 89,000 square feet of floor space enclosed in a blast resistant structural envelop. EMP shielding is provided and all sensitive building and communication equipment is shock isolated.

The underground facilities include complete heating, ventilating and air conditioning systems and self sustaining emergency power generating plant. Essential utilities are hardened where possible and where necessary emergency sources are provided.

Three buildings have been constructed from the standard plans and specifications developed for the prototype buildings. The Buildings were site adapted and modifications were provided to accommodate special space and equipment requirements at each location.



JOHN A. BLUME & ASSOCIATES, ENGINEERS

John A. Blume & Associates, Engineers, is an internationally recognized firm of civil, structural, and architect-engineers with exceptional capabilities in structural dynamics design and analysis. Personnel of this firm were instrumental in the design of the San Francisco Mint for vibration resistance.

The company was founded in 1945 by John A. Blume, who participated in the engineering design of many heavy construction projects both in the continental United States and abroad before starting his own practice. In 1957, the corporation was incorporated as John A. Blume & Associates, John A. Blume & Associates Research Division, and Graphic Ltd.

Today, some one hundred specialists are available in the Blume companies to provide engineering, management, and support services to all projects, as required. The carefully established balance between highly experienced, practical engineers and theoretically oriented research engineers -- together with close working relationships between Blume design and research personnel -- results in a unique and valuable capability. This continuous exposure of one group to the problems or advances of the other provides Blume clients with an exceptional service that combines the latest technological advances with seasoned engineering experience.

Vibratory and Seismic Engineering

The firm has an unequalled record of accomplishment in these fields. It serves as consultant on vibration- and earthquake-resistant design to private industry and to government agencies. The increasing complexity of today's technology creates many new problems in vibration and earthquake engineering. Solutions to these problems require sophisticated analytical and design methods. Computer programs for analyzing vibration forces in two- and three-dimensional structures have been developed by Blume engineers, and are continually being refined and up-dated. Manufacturing plants, high-rise buildings, and earth embankments and tunnels are typical subjects for this type of analysis.



The firm has provided or is presently providing consulting services to AMF Atomics, Tennessee Valley Authority, Argonne National Laboratory, Union Carbide Corporation, E. I. DuPont de Nemours & Company, the General Electric Company and others on nuclear power plans being designed or constructed in California, Minnesota, Wisconsin, Illinois, Tennessee, Idaho, New York, Georgia, Mexico, New Jersey, Japan, Pakistan, India, Spain, and Switzerland.

Blume computer programs are used in detailed structural analyses for dynamic and static loadings on all structures and buildings, and include the effects of the combined interaction of equipment, structures, and foundation material. Blume computer programs are also used for detailed analyses of static, thermal, and dynamic loadings for all types of nuclear power plant equipment including the reactor vessel, internals, circulating systems and piping.

STANDARD FORM 251

12. OUTSIDE ASSOCIATES AND CONSULTANTS USUALLY EMPLOYED BY YOUR FIRM
(Furnish a separate completed questionnaire for each firm or individual listed below but see note c, page 9)

a. CATEGORY	b. NAME OF FIRM OR INDIVIDUAL AND ADDRESS	a. CATEGORY	b. NAME OF FIRM OR INDIVIDUAL AND ADDRESS
A. ARCHITECTS		F. MECHANICAL ENGINEERS	
B. LANDSCAPE ARCHITECTS	Chris Moritz Gerald F. Kessler	G. ELECTRICAL ENGINEERS	
C. CIVIL ENGINEERS		H. PLANNERS	
D. STRUCTURAL ENGINEERS		I. ESTIMATORS	
E. SANITARY ENGINEERS	Franklin J. Agardy, Ph.D. San. Eng.	J. OTHER CONSULTANT AFFILIATIONS	Whiting Associates International, Inc. 32 Barnaba Oriani, Rome, Italy Hospital Planning Consultants

13. INDICATE IN ORDER OF PRECEDENCE, USING "1," "2," "3," ETC., THE TYPES OF PROJECTS IN WHICH YOUR FIRM SPECIALIZES (Work specialties not sufficiently identified by the printed general categories are to be listed separately in the spaces provided)

3	ACOUSTICS - SOUND SUPPRESSION	1	HOSPITALS	1	PUBLIC BUILDINGS	1	Pre-Arch Space Studies
1	AIRFIELD FACILITIES	1	HOUSING	2	SURVEYS AND REPORTS		
1	AIR COND. - REFRIG. - VENT.	1	INDUSTRIAL BUILDINGS	1	UTILITIES		
1	BRIDGES	1	IRRIGATION OR DRAINAGE	1	WATER - SEWAGE		
1	CHANNEL IMPROVEMENTS	1	LABORATORIES	1	Photogrammetry		
1	CHEMICAL FACILITIES	3	MANUALS				
1	COMMUNICATIONS	1	MASTER PLANNING - SITE DEVELOP.	1	Soils Engineering		
1	COMMERCIAL BUILDINGS	2	MILITARY STANDARD DESIGN				
2	EARTH FILL DAM WORK	1	MISSILES - FACILITIES - FUELS	1	Parks & Recreation		
1	ELECTRONIC FACILITIES	3	NUCLEAR FACILITIES	1	Studies & Development		
3	HARBOR FACILITIES	2	PETROLEUM FACILITIES	1	Educational Buildings		
1	HIGHWAYS	3	POWER - HEATING PLANTS				

14. INDICATE THE SCOPE OF SERVICES PROVIDED BY YOUR FIRM WITHOUT USE OF OUTSIDE ASSOCIATES OR CONSULTANTS ON TYPES OF PROJECTS INDICATED IN ITEM 13 (i.e. Architectural, Mechanical, Electrical, Structural, etc.)

This firm has complete Architect-Engineer capabilities for the projects, above, utilizing presently-employed personnel. Maximum size project completed to date - \$45,000,000.

15. PERSONAL HISTORY STATEMENT OF PRINCIPALS AND ASSOCIATES WITHIN -YOUR FIRM
(Furnish complete data but keep to essentials)

D. NAME (Last-first-middle initial)

MENHENNETT, ALAN E.

DATE OF BIRTH (Month-day-year)	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
March 2, 1929	2			19

EDUCATION (College, degree, year, specialization)

Colorado State University - BSCE, 1951

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Parking Assn.; ARBA; HRB; CEC

REGISTRATION (Type, year, State)

PE-Colo., 1960; Nev.; Utah; Mont.; Nebr.; Fla.

E. NAME (Last-first-middle initial)

DATE OF BIRTH (Month-day-year)

YEARS OF EXPERIENCE

AS PRINCIPAL IN THIS FIRM

AS PRINCIPAL IN OTHER FIRMS

OTHER THAN PRINCIPAL

EDUCATION (College, degree, year, specialization)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, year, State)

F. NAME (Last-first-middle initial)

DATE OF BIRTH (Month-day-year)

YEARS OF EXPERIENCE

AS PRINCIPAL IN THIS FIRM

AS PRINCIPAL IN OTHER FIRMS

OTHER THAN PRINCIPAL

EDUCATION (College, degree, year, specialization)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

REGISTRATION (Type, year, State)

A. NAME (Last-first-middle initial)

KRILL, ARTHUR M.

DATE OF BIRTH (Month-day-year)	YEARS OF EXPERIENCE	AS PRINCIPAL IN THIS FIRM	AS PRINCIPAL IN OTHER FIRMS	OTHER THAN PRINCIPAL
Oct. 17, 1921	8		8	11

EDUCATION (College, degree, year, specialization)

University of Colorado - BSME, 1943

University of Colorado - MSME, 1951

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Amer. Ordnance Assn.; Teknik Club; AAAS; NSPE; ASEE; CEC; ARBA; Amer. Soc. Mech. Engrs.

REGISTRATION (Type, year, State)

PE-1949, Colo., Ariz., Wyo., Mont. & others

B. NAME (Last-first-middle initial)

PRESZLER, DONALD L.

DATE OF BIRTH (Month-day-year)

YEARS OF EXPERIENCE

AS PRINCIPAL IN THIS FIRM

AS PRINCIPAL IN OTHER FIRMS

OTHER THAN PRINCIPAL

EDUCATION (College, degree, year, specialization)

University of North Dakota

North Dakota State University - 1949, B.S.

(Architectural Engineering)

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

Amer. Inst. of Architects; CEC; NCSBEE

REGISTRATION (Type, year, State) Arch.-1961, Colo., Ariz.,

Nev.; PE-1960, Colo. & others

C. NAME (Last-first-middle initial)

KOONSMAN, GEORGE L.

DATE OF BIRTH (Month-day-year)

YEARS OF EXPERIENCE

AS PRINCIPAL IN THIS FIRM

AS PRINCIPAL IN OTHER FIRMS

OTHER THAN PRINCIPAL

EDUCATION (College, degree, year, specialization)

Colorado State University - BSCE, 1947

MS (Irrigation), 1949

MEMBERSHIP IN PROFESSIONAL ORGANIZATIONS

American Society of Civil Engineers; Consulting Engineers Council (CEC)

REGISTRATION (Type, year, State)

PE-1951, Colo. & others; LS-1964, Colo. & others

16. PRESENT ACTIVITIES ON WHICH YOUR FIRM IS DESIGNATED ARCHITECT OR ENGINEER OF RECORD

NAME AND TYPE OF PROJECT	LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETED	
				DESIGN	FIELD SUPV.
Interstate Highway	Nephi, Utah	Utah Dept. of Highways	\$ 3,000,000	95	0
Kiln Dust Collection	Laramie, Wyoming	Monolith Portland Midwest Cement Co.	\$ 1,000,000	98	90
Emergency Wing	Denver, Colorado	C.U. Medical Center Denver, Colorado	\$ 2,500,000	16	0
Cement Plant Expansion	Monolith, California	Monolith Cement Co.	\$ 2,000,000	95	80
Professional & Graduate Center	Golden, Colorado	Colorado School of Mines Golden, Colorado	\$ 3,500,000	100	90
Anatomy-Zoology Bldg.	Ft. Collins, Colo.	Colo. State University	\$ 4,000,000	100	15
Interstate Highway & Structures	Longview-Wye-SSH 1-R	Washington State Hwy. Commission	\$25,000,000	85	NIC
Interstate Highways	Various in Montana	Montana Highway Dept.	\$25,000,000	80	NIC
Master Planning	Colorado	State Planning Agencies	Reports	Vari-ous	NIC
Southwest Storm Sewer District	Pueblo, Colorado	City of Pueblo	\$ 2,400,000	100	Pend-ing
High School	Trinidad, Colorado	School Board, Trinidad	\$ 2,500,000	100	40
High School	Hayden, Colorado	School Board, Hayden	\$ 1,100,000	100	60
Vancouver Freeway	Vancouver, Wash.	Washington Hwy. Comm.	\$12,800,000	90	NIC

TOTAL NUMBER OF PRESENT PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

16. PRESENT ACTIVITIES ON WHICH YOUR FIRM IS DESIGNATED ARCHITECT OR ENGINEER OF RECORD

NAME AND TYPE OF PROJECT	LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETED	
				DESIGN	FIELD SUPV.
Mobile Home Parks	Denver, Colorado	Mine & Smelter Supply	\$ 1,000,000	100	10
Storm Sewer Study & Design	Longmont, Colorado	City of Longmont	\$ 3,000,000	25	0
Interstate Hwy. 90 & Structures	Lodge Grass, Montana	Mont. State Hwy. Comm.	\$10,000,000	75	NIC
Mobile Home Parks	Denver, Colorado	Boise-Cascade	\$ 1,000,000	5	0
Office Building	Denver, Colorado	Colorado Hosp. Service & Colo. Medical Services	\$17,350,000	25	5
Hotel, Parking Plaza, Commercial Bldgs., Condominiums, Restaurants, Subdivisions	Steamboat Ski Area Colorado	LTV-RDI Steamboat Springs, Colorado	\$ 7,000,000	40	10
Topics Intersections	Adams County, Colo.	Adams County, Colo.	\$ 750,000	98	NIC
Airport Runway, Taxiway & Structures	Stapleton Int'l. Airport, Denver, Colo.	City & County of Denver	\$16,000,000	70	NIC
Cement Plant	Trident, Montana	Ideal Cement Co.	\$10,000,000	10	0
Misc. Construction	Rocky Flats, Colo.	AEC Dow Chemical	\$ 180,000	60	0
Omaha-Nebraska City Freeway Corridor Study	Omaha to Nebraska City, Nebraska	Nebraska Dept. of Roads	\$40,000,000	25 (Study)	0
Lakewood Arterials	Lakewood, Colorado	City of Lakewood	\$ 500,000	10	NIC

TOTAL NUMBER OF PRESENT PROJECTS:	TOTAL ESTIMATED CONSTRUCTION COST:
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16. PRESENT ACTIVITIES ON WHICH YOUR FIRM IS DESIGNATED ARCHITECT OR ENGINEER OF RECORD

NAME AND TYPE OF PROJECT	LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETED	
				DESIGN	FIELD SUPV.
I-70 Environmental Impact Study	Rifle, Colorado	Colo. Div. of Highways	N/A	5	N/A
I-470 Environmental Impact Study	Near Denver, Colo.	Colo. Div. of Highways	N/A	5	N/A
Reservoir Road	Greeley, Colorado	City of Greeley	\$ 200,000	15	NIC
Topics Planning	Walla Walla, Wash.	City of Walla Walla	\$ 28,000	5	N/A
I-15 Environmental Impact Study	Nephi, Utah	Utah Dept. of Highways	-- Negotiations		
Sanitary Sewer Master Plan	Littleton, Colorado	City of Littleton	N/A	40	N/A
Land Development Proj.	Denver, Colorado	Hallcraft Homes Co.	\$ 150,000	90	5
Land Development Proj.	Aurora, Colorado	Hallcraft Homes Co.	\$ 135,000	20	0
Land Development Proj.	Arapahoe County, Colo	Hallcraft Homes Co.	\$ 800,000	5	0
Mobile Home Park	Littleton, Colorado	Codeca, Inc.	\$ 800,000	5	0
Neighborhood Development Program	Longmont, Colorado	Longmont Urban Renewal Authority	\$ 700,000	40	20
Urban Renewal Program	Denver, Colorado	Denver Urban Renewal Authority	\$ 2,100,000	100	30
Kiln Dust Handling	Ravena, New York	Atlantic Cement Co.	\$ 450,000	20	0

TOTAL NUMBER OF PRESENT PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

16. PRESENT ACTIVITIES ON WHICH YOUR FIRM IS DESIGNATED ARCHITECT OR ENGINEER OF RECORD					
NAME AND TYPE OF PROJECT	LOCATION	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	PERCENT COMPLETED	
				DESIGN	FIELD SUPV.
Nodule Dust System	Pocatello, Idaho	F.M.C. Corporation	\$ 200,000	90	0
Crushing Plant	Monolith, California	Monolith Cement Co.	\$ 1,300,000	10	0
TOTAL NUMBER OF PRESENT PROJECTS:			TOTAL ESTIMATED CONSTRUCTION COST: \$198,443,000		

17. PRESENT ACTIVITIES ON WHICH YOUR FIRM IS ASSOCIATED WITH OTHERS

(Indicate phase of work for which your firm is responsible)

NAME OF PROJECT AND PHASE OF WORK	LOCATION	OWNER	ESTIMATED CONSTRUCTION COST OF		PERCENT OF ENTIRE PROJECT COMPLETED		FIRM ASSOCIATED WITH
			ENTIRE PROJECT	WORK FOR WHICH YOUR FIRM IS RESPONSIBLE	DESIGN	FIELD SUPV.	
Middle Street - Halawa Street, Interstate H-1	Honolulu, Hawaii	Hawaii Dept. of Trans. Highways Division	\$95- million	\$43- million	100	0	Sunn, Low, Tom & Hara, Inc.; Shimazu, Shima-bukuro & Fukuda, Inc.
Boulder Valley Transportation Study	Boulder, Colo.	City of Boulder, Colo.	N/A	N/A	60	N/A	W.C. Gilman Co., Cleveland & URS Research Co.
Saline Water Study	Arizona	State of Arizona	N/A	N/A	5	N/A	URS Research Co.

TOTAL NUMBER OF PRESENT PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST OF WORK FOR WHICH YOUR FIRM IS RESPONSIBLE:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON- STRUCTED (Yes or No)
Base Projects (17)	Yuma Test Center, Yuma, Arizona	1960	Base Engineer, Yuma Test Center, Yuma, Arizona	\$ 400,000	Yes
Streets & Electric Distribution	Lowry AFB, Colorado	1961	C.E., Omaha District	\$ 250,000	Yes
Master Plan for Airport & Industrial Park	Jefferson County, Colorado	1961	Jefferson County Planning Commission	Report	--
Phase I Expansion - Tijeras, New Mexico Cement Plant	Tijeras, New Mexico	1961	Ideal Cement Company, Denver, Colorado	\$ 9,000,000	Yes
Airport Master Planning Pavements & Utilities	Jefferson County, Colorado	1961	Board of Commissioners, Jefferson County	\$ 800,000	Yes
Cement Terminal	Seattle, Washington	1961	Ideal Cement Company, Denver, Colorado	\$ 4,000,000	Yes
ARTC Center	Longmont, Colorado	1961	FAA - Region 14, Los Angeles, California	\$ 1,500,000	Yes
Afghanistan Regional Transit Project (300 mi. of roadways & structures)	Kabul to Kandahar, Afghanistan	1961	Royal Government of Afghanistan (through ICA, now AID)	\$ 45,000,000	Yes
G/M (Mace) Student Check-Out Building	Lowry AFB, Colorado	1961	C.E., Omaha, Nebraska	\$ 100,000	Yes
Airport Master Plan & Pavement Design	Canon City, Colorado	1961	Fremont County, Colorado	\$ 100,000	Yes

TOTAL ESTIMATED CONSTRUCTION COST:

TOTAL NUMBER OF COMPLETED PROJECTS:

18.

COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD
DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COM- PLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	COM- STRUCTED (Yes or No)
Cement Storage and Packhouse	Tampa, Florida	1962	Ideal Cement Company, Denver, Colorado	\$ 3,250,000	Yes
Eight-Story Apartment Building	Denver, Colorado	1962	D. Bowey Company, Denver, Colorado	\$ 900,000	Yes
Cement Storage Center	Trident, Montana	1962	Ideal Cement Company, Denver, Colorado	\$ 2,600,000	Yes
Housing Complex - Windsor Gardens	Denver, Colorado	1962	Windsor Gardens Development Company	\$ 1,800,000	Yes
Master Plan - Ankara Air Station	Ankara, Turkey	1962	Headquarters, TUSLOG Ankara, Turkey	Planning	--
NCO Club	Lowry AFB, Colorado	1962	Lowry AFB, Colorado	\$ 200,000	Yes
Cement Terminal	Superior, Nebraska	1962	Ideal Cement Company, Denver, Colorado	\$ 1,200,000	Yes
Modification and Rehabilitation (64 projects)	Fitzsimons General Hospital, Aurora, Colorado	1962	USCE, Omaha, Nebraska	\$ 1,300,000	Yes
Runway 14-32	Buckley ANG Base	1962	Colorado ANG, Denver, Colorado	\$ 500,000	Yes
East 46th Ave., Ele- vated Interstate Hwy.	Denver, Colorado	1962	Colorado Department of Highways	\$ 11,000,000	Yes
Runway, Taxiway, & Apron	Pueblo, Colorado	1963	City of Pueblo, Colo.	\$ 500,000	Yes

TOTAL NUMBER OF COMPLETED PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON- STRUCTED (Yes or No)
Storm Drainage Study	Metropolitan Denver	1963	Inter-County Regional Planning Commission	Study	--
Nuclear Rocket Development Station, Phase I	Jackass Flats, Nev.	1963	Space Nuclear Propulsion Office, Nevada Test Site	\$ 2,000,000	Yes
Cement Manufacturing Plant	Castle Hayne, North Carolina	1963	Ideal Cement Company Denver, Colorado	\$ 23,500,000	Yes
Feasibility Study - 1,200-mile gas pipeline	Western U.S.A.	1963	American Pipeline Co., Denver, Colorado	\$240,000,000	No
Cement Mill Expansion	Tulsa, Oklahoma	1963	Dewey Cement Company, Tulsa, Oklahoma	\$ 2,000,000	Yes
Interstate Highway 80N	Weber Canyon, Utah	1963	Utah State Road Comm.	\$ 4,300,000	Yes
Missile Service Shops (4)	Hill AFB, Utah	1964	Hdqt's. AFLC, Wright-Patterson AFB	\$ 750,000	--
Clean Rooms Shop	Norton AFB, Calif.	1964	Hdqt's. AFLC, Wright-Patterson AFB	\$ 400,000	Yes
Cement Storage and Distribution	West Palm Beach, Florida	1964	Ideal Cement Company, Denver, Colorado	\$ 3,000,000	Yes
Miscellaneous Projects (23)	Colorado, Utah, New Mexico, Arizona	1964	GSA, Region 8	\$ 200,000	Yes
Cleaning & Plating - 77A	Rocky Flats Plant	1964	AEC, Albuquerque Operations Office	\$ 500,000	Yes

TOTAL NUMBER OF COMPLETED PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	COMPLETED (Yes or No)
Cement Storage and Distribution	Portland, Colorado	1964	Ideal Cement Company, Denver, Colorado	\$ 2,500,000	Yes
E. M. Barracks Complex (27 Buildings)	Fort Carson, Colo.	1964	U.S. Corps of Engrs., Omaha, Nebraska	\$ 11,000,000	Yes
Master Plan	Lake Tahoe, Nevada	1964	Douglas County, Nevada	Report	--
12-Story Office Bldg., Lincoln Towers-SM & #	Denver, Colorado	1964	T. W. Anderson	\$ 5,000,000	Yes
Meat Packing Plant	Brush, Colorado	1964	Sigman Meat Company Denver, Colorado	\$ 1,000,000	Yes
Alterations and Air-Conditioning, Air Force Finance Center	3800 York Street,	1965	GSA, Region 8	\$ 1,800,000	Yes & NO
New Airport Feasibility Study	Arapahoe County, Colorado	1965	Arapahoe County	\$ 3,000,000	Yes
Missile Service Shops (2)	Hill AFB, Utah	1965	USCE, Sacramento, California	\$ 400,000	Yes
Meat Packing Plant	Greeley, Colorado	1965	Monfort of Colorado Greeley, Colorado	\$ 2,500,000	Yes
Interstate Highway & Structures	Mt. Vernon Canyon, Colorado	1965	Colorado Department of Highways	\$ 12,000,000	Under Way
100 Units MCP Housing (thru preliminary plans)	F. E. Warren AFB, Wyoming	1965	USAF, Warren AFB, Wyoming	\$ 1,700,000	No

TOTAL NUMBER OF COMPLETED PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	COMPLETED (Yes or No)
Design Study for Downtown Core Area	Longmont, Colorado	1965	Committee - through Chamber of Commerce	Study	Under way
Plant Layout - Luggage Mfg. Facility	Denver, Colorado	1966	Samsonite Corporation Denver, Colorado	Report	--
Design of Hose Mfg. Machine	Denver, Colorado	1966	Gates Rubber Company Denver, Colorado	\$ 18,000	Yes
Cadet Encampment	U.S. Air Force Academy	1966	U.S. Air Force	\$ 175,000	Yes
Boiler Plant Rehabilitation and Steam Lines	State Home & Training School, Grand Junction Colorado	1966	Colorado State Dept. of Institutions	\$ 210,000	Yes
Cement Storage Expansion	Redwood City, California	1966	Ideal Cement Company, Denver, Colorado	\$ 3,000,000	Yes
Airport Expansion	Longmont, Colorado	1966	City of Longmont	\$ 50,000	Yes
Air Conditioning Boettcher School Auditorium	Denver, Colorado	1966	School District No. 1	\$ 60,000	Yes
Feasibility Study - 350-mile Gas Transmission Pipeline	North Dakota and South Dakota	1966	Midwest Natural Gas Co. Denver, Colorado	\$200,000,000	Pending
Reno By-Pass (I-80)	Reno, Nevada	1967	Nevada Dept. of Hyws.	\$ 14,000,000	Under way
Cement Manufacturing Plant	Seattle, Washington	1967	Ideal Cement Company Denver, Colorado	\$ 20,000,000	Yes

TOTAL NUMBER OF COMPLETED PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS						
NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	COM-STRUCTED (Yes or No)	
Production Line (Munitions)	Phoenix, Arizona	1967	Talley Industries, Mesa, Arizona	\$ 200,000	Yes	
Machines Design	Denver, Colorado	1967	Gates Rubber Company, Denver, Colorado	\$ 1,000,000	Yes	
Sewer Analysis and Pre-design Report	Arvada, Colorado	1967	City of Arvada	\$ 800,000	Pending	
Gas Line and Waste Effluent Line	Clinton, Iowa	1967	Chemplex Construction Corp., Clinton, Iowa	\$ 450,000	Yes	
Master Plan for Carson College	Carson City, Nevada	1967	Carson College Carson City, Nevada	Planning	--	
Miscellaneous Projects for City of Denver	Denver, Colorado	1967	Dept. of Public Works	\$ 500,000	Yes	
Central Mill Office Bldg.	Pueblo, Colorado	1967	CF&I Steel Corporation	\$ 1,500,000	No	
Interstate Highway & Structures (I-70)	Dowd-Gypsum, Colo.	1968	Colorado Department of Highways	\$ 20,000,000	Under way	
Service Center Complex	Lakewood, Colorado	1968	School District R-1 Jefferson County	\$ 2,500,000	Yes	
Interstate Highway 82 & Structures	Yakima to Ellensburg, Washington	1968	Washington State Highway Commission	\$ 22,000,000	Under way	
Selah Creek Structures (I-82)	North of Yakima, Washington	1968	Washington State Highway Commission	\$ 4,400,000	Yes	
TOTAL NUMBER OF COMPLETED PROJECTS:		TOTAL ESTIMATED CONSTRUCTION COST:			:	

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON- STRUCTED (Yes or No)
Engineering Center	Golden, Colorado	1968	Colorado School of Mines Golden, Colorado	\$ 3,000,000	No
Plant Sprinkler System	Littleton, Colorado	1968	C. A. Norgren Co.	\$ 100,000	Yes
Route Study, Skyline Freeway	Denver, Colorado	1968	Colorado Department of Highways	N/A	N/A
Uintah Jct.-Riverdale (I-80-N)	North of Salt Lake City, Utah	1968	Utah State Road Comm., Dept. of Highways	\$ 5,000,000	No
Belt Route I-215	Salt Lake City, Utah	1968	Utah State Road Comm., Dept. of Highways	\$ 5,000,000	No
Legislative Study, Eastside Freeway	Seattle, Washington	1968	Washington Hwy. Comm.	N/A	N/A
Office Building	Denver, Colorado	1969	G. Gatseos, Denver, Colorado	\$ 800,000	Yes
Education Center	Lakewood, Colorado	1969	District R-1 Jefferson County	\$ 2,500,000	Pend.
Microbiology Building	Fort Collins, Colo.	1969	Colorado State Univ.	\$ 1,500,000	Yes
ServiCenter	Englewood, Colorado	1969	City of Englewood	\$ 200,000	Yes
Community Building for Mobile Home Park	Federal Heights, Colorado	1970	Boise-Cascade- Los Angeles	\$ 250,000	Yes
Brick Mfg. Plant	Denver, Colorado	1970	Denver Brick and Pipe Company	\$ 2,600,000	Yes

TOTAL NUMBER OF COMPLETED PROJECTS:

TOTAL ESTIMATED CONSTRUCTION COST:

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS					
NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON-STRUCTED (Yes or No)
Office Building	Arapahoe County, Colo	1970	Ross Investment Co.	\$ 400,000	Yes
Specialty Meat Processing Plant	Cedartown, Georgia	1970	Hardee Foods (Shurtenda) Denver, Colorado	\$ 2,000,000	Yes
Ski Area Gondola Terminal Building	Steamboat Springs, Colorado	1970	LTV-Recreation Dev. Inc. Steamboat Springs, Colo.	\$ 500,000	Yes
Construction Management 1970 Program	Steamboat Springs, Colorado	1970	LTV-Recreation Dev. Inc. Steamboat Springs, Colo.	\$ 2,000,000	Yes
Cement Plant Expansion	Laramie, Wyoming	1970	Monolith Cement Co.	\$ 1,000,000	Yes
Cement Storage	Martinsburg, W. Va.	1970	Martin Marietta	\$ 300,000	Yes
Webster Lake Subdivision	Thornton, Colorado	1970	Dr. D.A. Berg	N/A	Yes
Cooler Dust Collector	Ravena, New York	1970	Atlantic Cement Co.	\$ 1,500,000	Yes
Master Plan - 10 Year Program-Resort Area	Steamboat Ski Area Colorado	1970	LTV-Recreation Dev. Inc. Steamboat Springs, Colo.	\$ 65,000,000 Plan	Partial
Interstate Highway I-94	Miles City, Montana	1970	Montana State Hwy. Comm	\$ 9,500,000	Under way
I-470 Southwest Belt Route Location Study	West of Denver, Colorado	1970	Colorado Division of Highways	N/A	N/A
Runway Evaluation & Airport Master Plan	Miles City, Montana	1969	Miles City Airport Commission	N/A	N/A
TOTAL NUMBER OF COMPLETED PROJECTS:				TOTAL ESTIMATED CONSTRUCTION COST:	

18. COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD DURING THE LAST 10 YEARS					
NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COMPLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON-STRUCTED (Yes or No)
Comprehensive Plan Traffic Study	Longmont, Colorado	1969	City of Longmont	N/A	N/A
Transportation Plan	Kent, Washington	1970	City of Kent, Wash.	N/A	N/A
I-25 Valley Hwy-Speer Blvd. Structures	Denver, Colorado	1970	Colorado Division of Highways	\$ 300,000	Yes
Topics Intersections	Wheat Ridge, Colo.	1970	City of Wheat Ridge	\$ 45,000	Under way
I-470 Recreational Impact Study	Denver, Colorado	1970	Colorado Division of Highways	N/A	N/A
Storm Sewer Study	Longmont, Colorado	1970	City of Longmont	N/A	N/A
Storm Drain Study	Arvada, Colorado	1970	City of Arvada	N/A	N/A
Interstate I-10	Gadsen County, Fla.	1971	Florida State Road Dept.	\$ 10,000,000	Pend
Interstate I-10	Ehrenburg-Phoenix, Arizona	1971	Arizona Highway Dept.	\$ 5,000,000	Pend.
Grand Ave. Water Line	Phoenix, Arizona	1971	City of Phoenix	\$ 220,000	Yes
Sewage Disposal Plant	Longmont, Colorado	1971	City of Longmont	\$ 700,000	Yes
Deer Creek County Road	Jefferson Co., Colo.	1971	Jefferson County	\$ 400,000	Yes
Mobile Home Parks	Denver, Phoenix	1971	Boise Cascade Bldg. Co.	\$ 1,750,000	Yes
TOTAL NUMBER OF COMPLETED PROJECTS:		TOTAL ESTIMATED CONSTRUCTION COST:			

18.

COMPLETED WORK ON WHICH YOUR FIRM WAS DESIGNATED ARCHITECT OR ENGINEER OF RECORD
DURING THE LAST 10 YEARS

NAME AND TYPE OF PROJECT	LOCATION	YEAR YOUR WORK COM- PLETED	NAME AND ADDRESS OF OWNER	ESTIMATED CONSTRUCTION COST	CON- STRUCTED (Yes or No)
Mobile Home Parks	Phoenix, Ariz. & Clearwater, Florida	1971	Realty Systems, Inc.	\$ 500,000	Yes
North Platte Freeway Corridor Study	Near Scottsbluff, Nebraska	1971	Nebraska Department of Roads	\$ 65,000,000	N/A
(The above represents a selected range of projects to show the overall capabilities of the firm and is not a complete listing of projects of record.)					
TOTAL NUMBER OF COMPLETED PROJECTS:				TOTAL ESTIMATED CONSTRUCTION COST: \$878,128,000	

19. COMPLETED WORK ON WHICH YOUR FIRM WAS ASSOCIATED WITH OTHER FIRMS DURING THE LAST 10 YEARS

(Indicate phase of work for which your firm was responsible)

NAME OF PROJECT AND PHASE OF WORK	LOCATION	OWNER	YEAR YOUR WORK COMPLETED	ESTIMATED CONSTRUCTION COST OF		CON-STRUCTED (Yes or No)	FIRM ASSOCIATED WITH
				ENTIRE PROJECT	WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE		
GSA Stores Depot (Structural, Mechanical, Electrical, Civil and Specifications)	Denver, Colo.	General Services Administration, Washington, D.C.	1964 Des. 1965 Construction.	\$5,300,000	\$5,300,000	Yes	Paul Reddy, AIA (Joint Venture)
Sanitary Sewerage Treatment Plants and adjacent counties	Denver, Colo.	Denver Metropolitan Sanitation Dist. No. 1	1966	\$30- million	\$6- million	Yes	A Joint Venture, Phillips-Carter-Reister & Assoc. & Henningson, Durham & Richardson, Inc.
Federal Reserve Branch Bank	Denver, Colo.	Federal Reserve District of Kansas City	1968	\$5,500,000	(KRW prime contractor)	Yes	W. C. Muchow, AIA
Saigon Hospital Care Feasibility Study	Saigon, Vietnam	AID	1968	N/A	N/A	N/A	Whiting Associates International
Dual Carriageway	Benghazi, Tripoli	Municipality of Benghazi	1969	\$6,000,000	\$1,000,000	Yes	Whiting Associates International
Saline Water Study	Colorado	State of Colorado	1971	N/A	N/A		URS Research Co.
C.U. Transportation Study	Boulder, Colo.	University of Colorado	1971	N/A	N/A		URS Research Co.
TOTAL NUMBER OF COMPLETED PROJECTS:				TOTAL ESTIMATED CONSTRUCTION COST OF WORK FOR WHICH YOUR FIRM WAS RESPONSIBLE:			

CAPSULE RESUMES
OF
SELECTED PERSONNEL



ARTHUR M. KRILL, P.E.
President
The Ken R. White Company

Specialized Competence:
Technical management and administration
Air pollution control
Engineering planning, research and design

Member: Air Pollution Variance Board,
State of Colorado

Education:
BSME, 1943
MS, 1951

GEORGE L. KOONSMAN, P.E., L.S.
Vice President, Civil and Industrial
The Ken R. White Company

Specialized Competence:
Overall direction of civil, sanitary and water
pollution control projects
Industrial plant planning and design
Dust collection to control air pollution

Member: Groundwater Commission, State of Colorado

Education:
BSCE, 1947
MS, 1949

ALAN E. MENHENNETT, P.E.
Vice President, Transportation and Planning
The Ken R. White Company

Specialized Competence:
Transportation system planning and design
Urban planning
Overall direction of interdisciplinary work in
transportation and planning

Education:
BSCE, 1951

DONALD L. PRESZLER, P.E., R.A.
Vice President, Architecture
The Ken R. White Company

Specialized Competence:
Architectural design of institutional, industrial
and commercial buildings
Architectural design of transportation facilities
Direction of interdisciplinary planning of recrea-
tional and housing complexes
Coordination of elements of human scale and needs
into construction projects

Education:
BSAE, 1949



CARLOS R. CAVANAGH
Assistant to the President
Senior Planning Consultant
The Ken R. White Company

Specialized Competence:

Urban and regional planning and economic analysis
Recreation and resort planning studies
Land development design and analysis
Traffic and transportation systems planning
Industrial development planning
Port development studies

Education:

AB, 1950
MCP, 1953

JOHN A. DAVIS
Director of Planning
The Ken R. White Company

Specialized Competence:

Comprehensive Planning - community and regional
Comprehensive outdoor recreation planning
Planning for transportation studies

Education:

BA, 1952
MS, 1964

MYRON B. HAWKINS, P.E.
Vice President and Director
of Environmental Program
Development
URS Systems Corporation

Specialized Competence:

Waste management systems
Systems analysis and modeling of
waste and resource systems
Environmental impact analysis

Education:

BS, 1942

STUART P. WALSH
Economics Consultant to
URS Research Company

Specialized Competence:

Organizational planning of community
development programs
Area and regional economic analysis
Land development feasibility studies

Member: Urban Land Institute, Trustee,
Member of Executive Group

FRANKLIN J. AGARDY, Ph.D.
Vice President
Director, Environmental Systems Division
URS Research Company

Specialized Competence:

Environmental pollution control
Water resources engineering
Generating and directing interdisciplinary
environmental research

Member: California Water Pollution Control Association
International Association on Water Pollution Research

Education:

BCE, 1955
MS, 1958
Ph.D., 1963



HARRY H. CHENOWETH, P.E.
Project Engineer
Hill, Ingman, Chase & Company

Specialized Competence:
Hydraulic and sanitary systems for
fish hatcheries
Sewage treatment systems

Education:
BS, 1937
MS, 1957

DAVID E. NICHOLS, A.I.A.
Chief Architect
The Ken R. White Company

Specialized Competence:
Coordination of disciplines involved in
planning and design of buildings
Housing
Educational buildings

Education:
BSAE, 1949

GEORGE A. THORSON, A.I.A.
Director of Design
The Ken R. White Company

Specialized Competence:
Architectural design involving environmental
and aesthetic considerations
Interdisciplinary projects in transportation
and recreation planning

Member: Interprofessional Council for
Environmental Design
Colorado Open Space Coordinating Council

Education:
BS, 1949
Graduate Studies

BARBARA L. WESTREE
Associate Research Biologist
URS Research Company

Specialized Competence:
Biological science studies of impact
of public works projects
Ecology, wildlife biology
Hydrobiology

Education:
BA, 1967
MSc, 1969



GAIL B. BOYD
Research Engineer
URS Research Company

Specialized Competence:
Research and development in physical
sciences and in civil engineering
Composting and landfill systems

Education:
BS, 1964
MS, 1966
Operations research studies

HERBERT L. NOBLE, P.E.
Chief Engineer, Materials
and Substructures Division
The Ken R. White Company

Specialized Competence:
Landslide analysis and control
Terrain evaluation
Soils engineering

Education:
BSCE, 1946

ROLF D. ROHWER, P.E.
Geologic Engineer
The Ken R. White Company

Specialized Competence:
Field and laboratory soils and
geologic investigation
Evaluation of geologic, soils and
drainage features for use in
environmental mapping procedure

Education:
BSCE, 1950

DAVID B. SAPIK
Ground Water Hydrologist
Consultant to
The Ken R. White Company

Specialized Competence:
Ground water hydrology
Geologic and hydraulic engineering

Education:
BS, 1960
MS, 1968
Graduate studies

ELDON M. STOCK, P.E.
Project Manager
The Ken R. White Company

Specialized Competence:
Hydraulics and hydrology
Irrigation systems
Fish hatchery design

Education:
BSCE, 1934
MS, 1940
CE, 1947



RICHARD F. SPARLIN, P.E.
Chief Transportation Engineer
The Ken R. White Company

Specialized Competence:
Planning and direction of multi-discipline team
projects in transportation and planning
Highway and airport design

Education:
BSCE, 1956
MSCE, 1957

JERRY L. SPICER, P.E.
Project Manager, Transportation
The Ken R. White Company

Specialized Competence:
Environmental mapping for selection of location
for transportation and other facilities
Transportation system planning and design

Education:
BSCE, 1957

EDWARD C. STEVENSON, P.E.
Project Manager
The Ken R. White Company

Specialized Competence:
Recreation impact studies
Highway route studies and design

Education:
BSCE, 1954
Graduate studies

WILLIAM A. WOOLFORD, P.E.
Engineer and Appraiser
The Ken R. White Company

Specialized Competence:
Appraisals of special-purpose properties
Planning of modular housing systems

Education:
BSCE, 1951
Graduate studies



DAVID A. JOHNSON, P.E.
Chief Industrial Engineer
The Ken R. White Company

Specialized Competence:
Industrial engineering
Pollution control systems for
industry

Education:
BSEE, 1949
BSCE, 1970

ROBERT B. DAVIS
Mining Engineer
The Ken R. White Company

Specialized Competence:
Design of air and water pollution
control facilities for mineral-
processing industries

Education:
B. Mining Engr., 1951

SARGIS S. SAFARIAN, P.E.
Chief Structural Engineer
The Ken R. White Company

Specialized Competence:
Structural analysis and design
Storage facilities for bulk
material

Education:
BSCE, 1941
Graduate studies

ERNEST C. HARRIS, Ph.D., P.E.
Senior Staff Engineer
The Ken R. White Company

Specialized Competence:
Structural design
Engineering geology
Technical writing and editing

Education:
BSCE, 1939
MSCE, 1954
Ph.D., 1971



FEDERAL RESERVE BRANCH BANK, DENVER
(W.C. Muchow Associated)
East (16th and Curtis Streets) Elevation



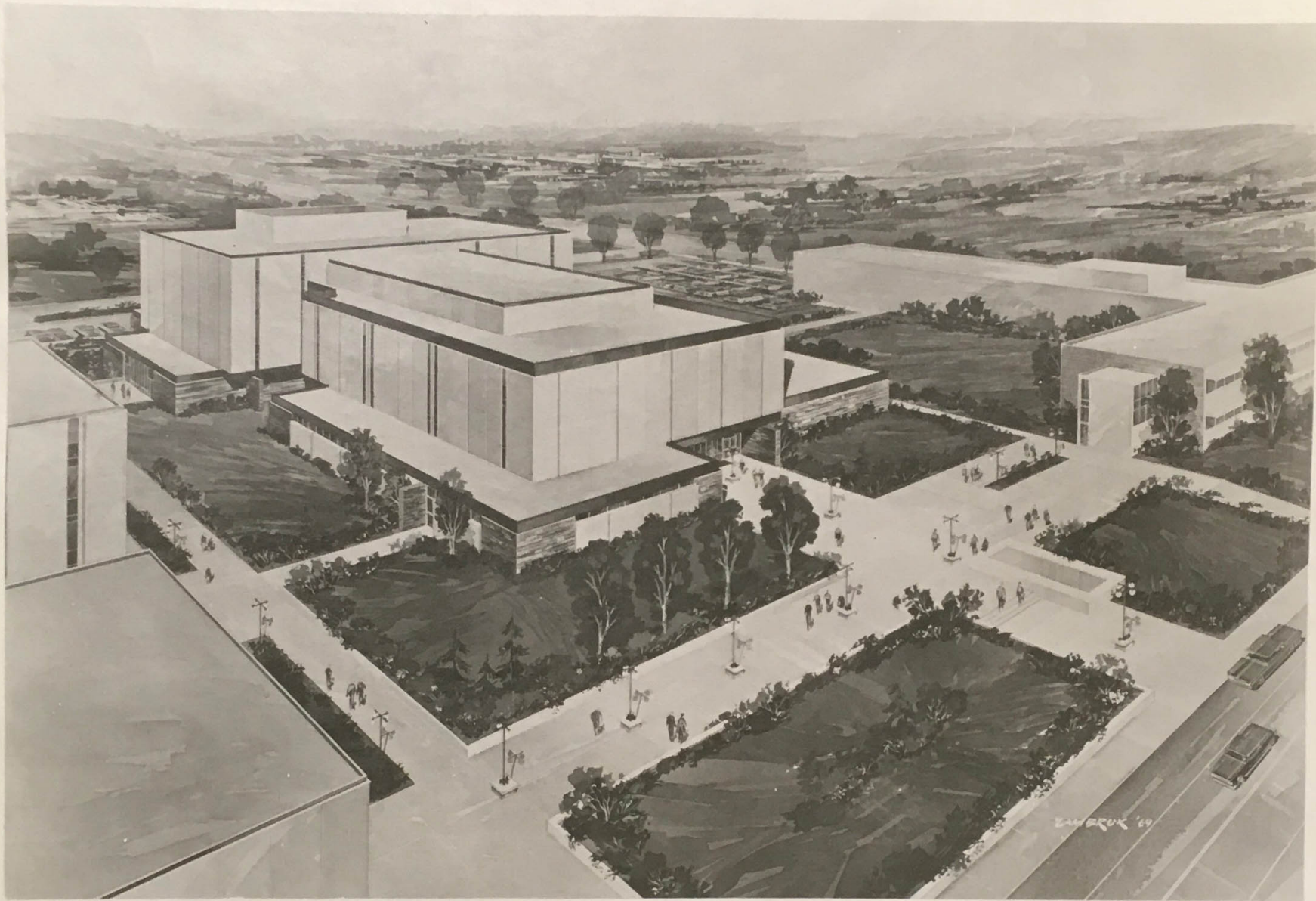
FEDERAL RESERVE BRANCH BANK, DENVER
Northeast (16th Street) Facade
(W.C. Muchow Associated)



FEDERAL RESERVE BRANCH BANK, DENVER
Interior View



FEDERAL RESERVE BRANCH BANK, DENVER
Interior at Vault Entry



ANATOMY—ZOOLOGY BUILDING
COLORADO STATE UNIVERSITY

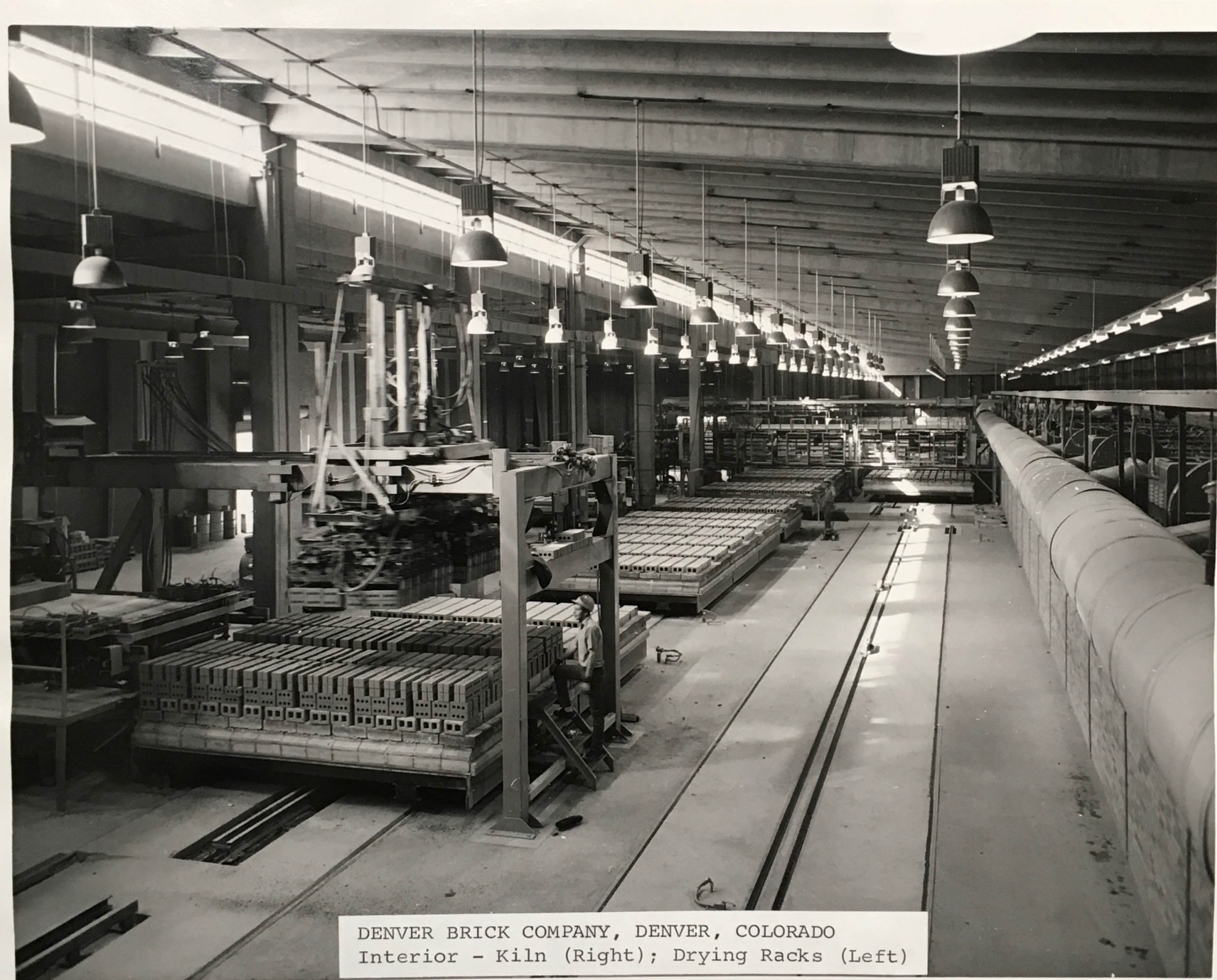
THE KEN R. WHITE CO. & DONALD L. PRESZLER
ARCHITECT—ENGINEERS



DENVER BRICK COMPANY, DENVER, COLORADO
Exterior - Detail at North Wall



DENVER BRICK COMPANY, DENVER, COLORADO
Northeast Elevation



DENVER BRICK COMPANY, DENVER, COLORADO
Interior - Kiln (Right); Drying Racks (Left)



GSA STORES WAREHOUSE, DENVER FEDERAL CENTER
(With Paul Reddy, Architect)
Southwest Elevation



GRADUATE AND PROFESSIONAL CENTER
COLORADO SCHOOL OF MINES, GOLDEN, COLORADO
Southwest Elevation



GRADUATE AND PROFESSIONAL CENTER
COLORADO SCHOOL OF MINES, GOLDEN, COLORADO
Northwest Elevation



GRADUATE AND PROFESSIONAL CENTER
COLORADO SCHOOL OF MINES, GOLDEN, COLORADO
Typical Lecture Room



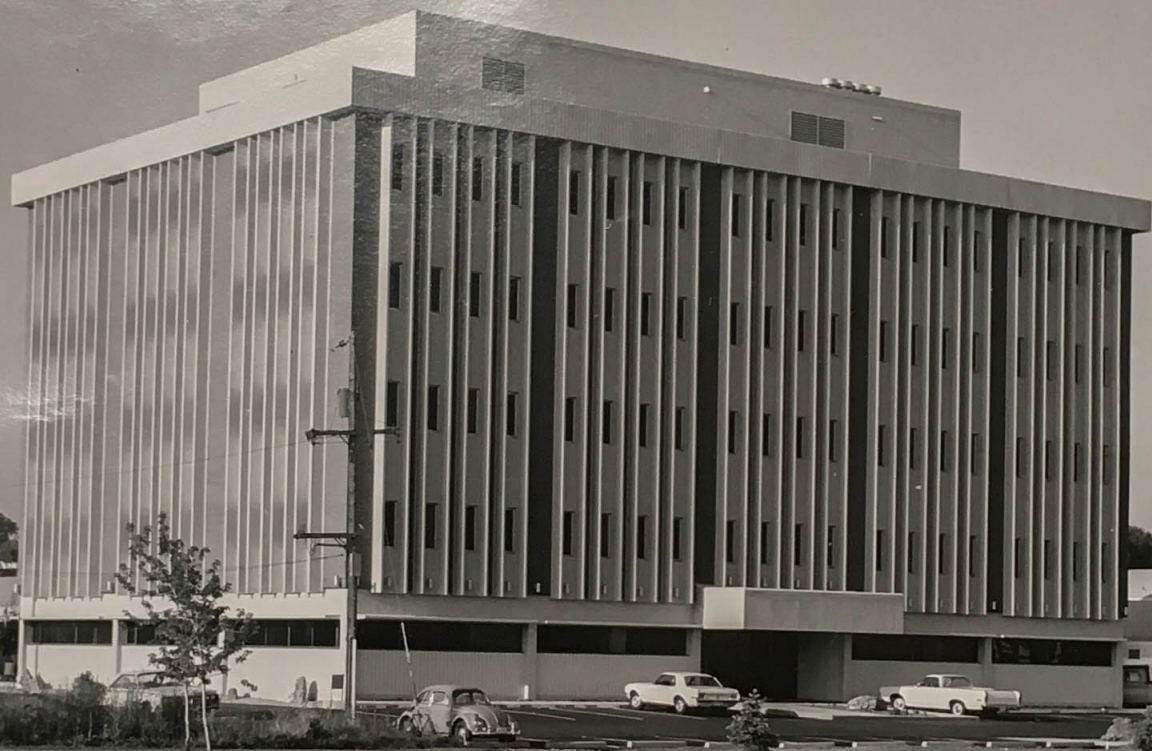
GRADUATE AND PROFESSIONAL CENTER
COLORADO SCHOOL OF MINES, GOLDEN, COLORADO
Auditorium Interior



LINCOLN TOWERS BUILDING, DENVER, COLORADO
(With Robert Heister, Architect)
Northwest Elevation



LINCOLN TOWERS OFFICE BUILDING, DENVER, COLORADO
(With Robert Heister, Architect)
Interior at Lobby Entrance



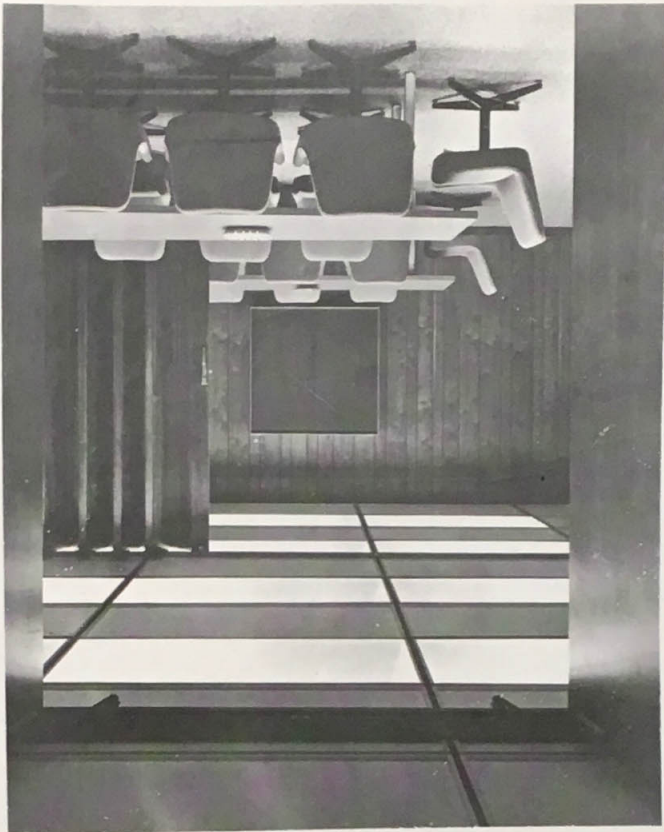
CHERRY CREEK DRIVE OFFICE BUILDING, DENVER, COLORADO
Northeast Elevation



Standing five stories high, this handsome structure boasts more than 45,000 square feet of office space.

Smooth, precast concrete columns, accentuated by alternating bands of brick masonry, give the facade a strong, vertical appearance. Within these columns, large glare-reducing glass windows offer

tenants a commanding view of the building's landscaped base and surrounding mountains.



Office space is partitioned to suit individual tenants. Since each tenant's spatial and decorating needs differ, a flexible source of lighting and air distribution is supplied by an Armstrong C-60/30 Luminare Ceiling. With this system, lighting units and flat panels can be added, removed, or exchanged to meet specific footcandle requirements. Conditioned air is supplied through a common plenum and distributed by the ceiling grids—offices can be arranged in any configuration without fear of affecting the basic mechanical system. In addition to providing flexible lighting and uniform ventilation, the Luminare Ceiling maintains two-hour rated fire protection plus acoustical control.





COLORADO BLUE CROSS/BLUE SHIELD BUILDING, DENVER, COLORADO
Rendering - Southeast Elevation



STEAMBOAT VILLAGE INN, STEAMBOAT SPRINGS, COLORADO
Rendering - West Elevation



KEN R. WHITE COMPANY 3955 East Exposition Avenue, Denver, Colorado 80209
303/744-1861 Cable Address: KENWHITE, Denver

BRANCH OFFICES: Boulder, Colorado / Scottsbluff, Nebraska / Helena, Montana / Yakima, Washington
Salt Lake City, Utah / Honolulu, Hawaii / Phoenix, Arizona / Coral Gables, Florida / Washington, D.C.

Statement of Qualifications for Design of New Denver Mint On Co
The Hon R. Wallace Co,

URS Company Proposal for Professional Services

URS

PROPOSAL
FOR PROFESSIONAL SERVICES FOR A PRELIMINARY
CONSTRUCTION COST ESTIMATE AS PART OF THE
DENVER MINT IMPROVEMENT STUDY

Prepared for
U. S. Department of the Treasury
Bureau of the Mint
Denver Mint

Prepared by
URS COMPANY
3955 E. Exposition Ave.
Denver, Colorado 80209

URS

AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

URS COMPANY
3955 EAST EXPOSITION AVENUE
DENVER, COLORADO 80209
TEL: (303) 744-1861

NEW YORK
SAN FRANCISCO
WASHINGTON, D.C.
DALLAS
SEATTLE
DENVER
KANSAS CITY
HONOLULU
NEW ORLEANS
SAN MATEO
HONG KONG
BOLIVIA

August 14, 1978

U. S. Department of the Treasury
Bureau of the Mint
Denver Mint
320 West Colfax Avenue
Denver, Colorado 80204

Attention: Mr. Duane Sjaardema
Superintendent, Building and Maintenance

RE: Denver Mint Improvement Study
URS No. 800-141

Gentlemen:

URS Company appreciates this opportunity to submit the enclosed Technical Proposal and Statement of Qualifications to the U. S. Mint for the provision of professional services for a preliminary construction cost estimate as part of the Denver Mint Improvement Study.

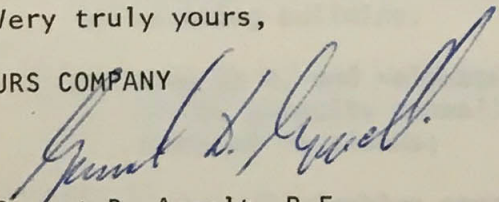
We feel that URS is well qualified to carry out this project to the satisfaction of the Denver Mint. We have assembled a Project Team with considerable experience in this type of work.

As a multidisciplinary Architecture/Engineering firm, URS Company is able to offer the Denver Mint in-house services for all aspects of the project. This includes Architecture and Planning as well as Industrial, Structural, Mechanical, Electrical and Civil Engineering.

Our firm is prepared to undertake this work immediately and complete the report within six weeks.

Very truly yours,

URS COMPANY



Gernot D. Appelt, P.E.
Principal Engineer

GDA:lw

Enclosure

U.S. Dept. of the Treasury
Page Two
August 14, 1978

2. Evaluate these schemes and outline the necessary building alterations and additions.
3. Investigate the application of materials handling equipment.
4. Prepare a preliminary construction cost estimate for the three basic schemes.
5. Write a report outlining the findings and issue five copies to the Mint.

B. FEES

Our fees for the Basic Services as outlined above will be on a time and material basis at a rate of 2.15 the "Payroll Costs" (as defined in Paragraph 4.3 of Exhibit A, attached) of our employees engaged on the assignment, plus expenses times a multiplier of 1.10 (Payroll costs and reimbursable expenses are defined in Paragraph 4.4 of "Exhibit A"). However, the total cost of the Basic Services shall not exceed Ten Thousand Dollars (\$10,000).

If specifically requested, URS will perform any additional services not identified within the Scope of the Basic Services, on the same time and materials basis as described above.

C. TERMS AND CONDITIONS

This proposal and the amended NSPE General Provisions (Exhibit A) attached, represent our agreement with respect to the project, and may be modified only in writing by both parties. If this proposal is satisfactory to the U. S. Mint, please sign the enclosed copy of this proposal in the space provided below, and return the signed copy to URS. This proposal will be open for acceptance until September 15, 1978.

URS Company could complete the basic Services within six (6) weeks from the date of Notice to Proceed.

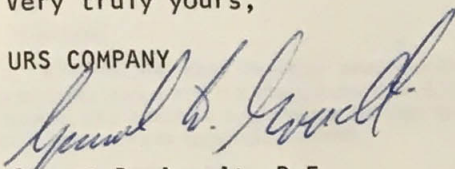
U.S. Dept. of the Treasury
Page Three
August 14, 1978

URS No. 800-141

Thank you for considering URS Company for this work.

Very truly yours,

URS COMPANY



Gernot D. Appelt, P.E.
Principal Engineer

ACCEPTED this _____ day of _____, 1978,

for the UNITED STATES MINT:

BY _____

TITLE _____

GENERAL PROVISIONS

Attached to and made a part of LETTER AGREEMENT
dated August 14, 1978, between

U.S. DEPARTMENT OF THE TREASURY (Owner)
BUREAU OF THE MINT and

URS COMPANY (Engineer)

in respect of the project (Project) described therein.

SECTION 1—BASIC SERVICES OF ENGINEER

1.1. General.

1.1.1. ENGINEER shall perform professional services as hereinafter stated which include normal civil, structural, mechanical and electrical engineering services and normal architectural services incidental thereto.

1.2. Study and Report Phase.

After written authorization to proceed, ENGINEER shall:

1.2.1. Consult with OWNER to determine his requirements for the Project and review available data.

1.2.2. Advise OWNER as to the necessity of his providing or obtaining from others data or services of the types described in paragraph 3.2, and act as OWNER's representative in connection with any such services.

1.2.3. Provide special analyses of OWNER's needs, planning surveys, site evaluations and comparative studies of prospective sites and solutions.

1.2.4. Provide general economic analysis of OWNER's requirements applicable to various alternatives.

1.2.5. Prepare a Report with appropriate exhibits indicating clearly the considerations involved and the alternative solutions available to OWNER, and setting forth ENGINEER's findings and recommendations with opinions of probable costs.

1.2.6. Furnish five copies of the Report and present and review it in person with OWNER.

~~1.3. Preliminary Design Phase.~~

~~After written authorization to proceed with the Preliminary Design Phase, ENGINEER shall:~~

~~1.3.1. In consultation with OWNER and on the basis of the accepted Report, determine the scope of the Project.~~

~~1.3.2. Prepare preliminary design documents consisting of final design criteria, preliminary drawings and outline specifications.~~

~~1.3.3. Based on the information contained in the preliminary design documents, submit a revised opinion of probable cost for the Project including Construction Cost, contingencies, compensation for all professionals and consultants, costs of land, rights-of-way and compensation for or damages to properties and interest and financing charges (all of which are hereinafter called "Project Costs").~~

~~1.3.4. Furnish five copies of the above preliminary design documents and present and review them in person with OWNER.~~

~~1.4. Final Design Phase.~~

~~After written authorization to proceed with the Final Design Phase, ENGINEER shall:~~

~~1.4.1. On the basis of the accepted preliminary design documents prepare for incorporation in the Contract Documents, final drawings to show the character and scope of the work to be performed by contractors on the Project (hereinafter called "Drawings"), and Specifications.~~

~~1.4.2. Furnish to OWNER such documents and design data as may be required for, and assist in the preparation of, the required documents, so that OWNER may obtain approvals of such governmental authorities as have jurisdiction over design criteria applicable to the Project, and assist in obtaining such approvals by participating in submissions to and negotiations with appropriate authorities.~~

~~1.4.3. Advise OWNER of any adjustments to his latest opinion of probable Project Cost caused by changes in scope, design requirements or Construction Costs and furnish a revised opinion of probable Project Cost based on the Drawings and Specifications.~~

~~1.4.4. Prepare bid forms, notice to bidders, instructions to bidders, general conditions and supplementary conditions, and assist in the preparation of other related documents.~~

~~1.4.5. Furnish five copies of the above documents and present and review them in person with OWNER.~~

~~1.5. Bidding or Negotiating Phase.~~

~~After written authorization to proceed with the Bidding or Negotiating Phase, ENGINEER shall:~~

~~1.5.1. Assist OWNER in obtaining bids or negotiating proposals for each separate prime contract for construction or equipment.~~

~~1.5.2. Consult with and advise OWNER as to the acceptability of subcontractors and other persons and organizations proposed by the prime contractor(s) (hereinafter called "Contractor(s)") for those portions of the work as to which such acceptability is required by the Contract Documents.~~

~~1.5.3. Consult with and advise OWNER as to the acceptability of substitute materials and equipment proposed by Contractor(s) when substitution is permitted by the Contract Documents.~~

~~1.5.4. Assist OWNER in evaluating bids or proposals and in assembling and awarding contracts.~~

~~1.6. Construction Phase.~~

~~During the Construction Phase ENGINEER shall:~~

~~1.6.1. Consult with and advise OWNER and act as his representative as provided in Articles 1 through 17, inclusive, of the Standard General Conditions of the Construction Contract, National Society of Professional Engineers document 1910-8, 1974 edition; all of OWNER's instructions to Contractor(s) will be issued through ENGINEER who will have authority to act as OWNER's professional engineering representative during construction.~~

~~1.6.2. Make periodic visits to the site to observe as an experienced and qualified design professional the progress and quality of the executed work and to determine in general if the work is proceeding in accordance with the Contract Documents; he shall not be required to make exhaustive or continuous on-site inspections to check the quality or quantity of work; he shall not be responsible~~

for the means, methods, techniques, sequences or procedures of construction selected by Contractor(s) or the safety precautions and programs incident to the work of Contractor(s). His efforts will be directed toward providing assurance for OWNER that the completed Project will conform to the Contract Documents, but he shall not be responsible for the failure of Contractor(s) to perform the construction work in accordance with the Contract Documents. During such visits and on the basis of his on-site observations he shall keep OWNER informed of the progress of the work, shall endeavor to guard OWNER against defects and deficiencies in the work of Contractor(s) and may disapprove or reject work as failing to conform to the Contract Documents.

1.6.3. Review and approve Shop Drawings (as that term is defined in the aforesaid Standard General Conditions) and samples, the results of tests and inspections and other data which any Contractor is required to submit, but only for conformance with the design concept of the Project and compliance with the information given in the Contract Documents; determine the acceptability of substitute materials and equipment proposed by Contractor(s); and receive and review (for general content as required by the Specifications) maintenance and operating instructions, schedules, guarantees, bonds and certificates of inspection which are to be assembled by Contractor(s) in accordance with the Contract Documents.

1.6.4. Issue all instructions of OWNER to Contractor(s); prepare routine change orders as required; he may, as OWNER's representative, require special inspection or testing of the work; he shall act as interpreter of the requirements of the Contract Documents and judge of the performance thereunder by the parties thereto and shall make decisions on all claims of OWNER and Contractor(s) relating to the execution and progress of the work and all other matters and questions related thereto; but ENGINEER shall not be liable for the results of any such interpretations or decisions rendered by him in good faith.

1.6.5. Based on his on-site observations as an experienced and qualified design professional and on his review of Contractor(s)' applications for payment and the accompanying data and schedules, determine the amounts owing to Contractor(s) and approve in writing payments to Contractor(s) in such amounts; such approvals of payment will constitute a representation to OWNER, based on such observations and review, that the work has progressed to the point indicated and that, to the best of his knowledge, information and belief, the quality of the work is in accordance with the Contract Documents (subject to an evaluation of the work as a functioning Project upon Substantial Completion, to the results of any subsequent tests called for in the Contract Documents, and to any qualifications stated in his approval), but by approving an application for payment ENGINEER will not be deemed to have represented that he has made any examination to determine how or for what purposes any Contractor has used the moneys paid on account of the Contract Price, or that title to any of Contractor(s)' work, materials or equipment has passed to OWNER free and clear of any lien, claims, security interests or encumbrances.

1.6.6. Conduct an inspection to determine if the Project is substantially complete and a final inspection to determine if the Project has been completed in accordance with the Contract Documents and if each Contractor has fulfilled all of his obligations thereunder so that ENGINEER may approve, in writing, final payment to each Contractor.

1.6.7. ENGINEER shall not be responsible for the acts or omissions of any Contractor, any subcontractor or any

of the Contractor(s) or subcontractors' agents or employees or any other persons (except his own employees and agents) at the Project site or otherwise performing any of the work of the Project.

SECTION 2—ADDITIONAL SERVICES OF ENGINEER

2.1. Normal and customary engineering services do not include services in respect of the following categories of work which are usually referred to as Additional Services. If OWNER wishes ENGINEER to perform any Additional Services, he shall so instruct ENGINEER in writing, and ENGINEER will be paid therefor as provided in the Letter Agreement. Additional Services include:

- Preparation of applications and supporting documents for governmental financial support of the Project; and preparation or review of environmental studies and related services.
- Services to make measured drawings of or to investigate existing conditions or facilities.
- Major changes in documentation previously accepted by OWNER where changes are due to causes beyond ENGINEER's control.
- Providing renderings or models.
- Preparing documents for alternate bids requested by OWNER for work which is not executed or for out-of-sequence work.
- Detailed consideration of operations, maintenance and overhead expenses; and the preparation of rate schedules, earnings and expense statements, feasibility studies, appraisals and valuations.
- Furnishing the services of special consultants.
- Services resulting from the involvement of more than one prime contract for construction of the Project, or the construction contract containing cost-plus or incentive-savings provisions for Contractor's basic compensation.
- Services in connection with change orders to reflect major changes requested by OWNER and services resulting from material, equipment or energy shortages.
- Services during out-of-town travel other than visits to the Project site.
- Preparing for OWNER, on request, a set of reproducible record prints based on data furnished by Contractor(s).
- Additional or extended services during construction made necessary by (1) work damaged by fire or other cause during construction, (2) a significant amount of defective or neglected work of or default by any Contractor, and (3) prolongation of the contract time.
- Preparation of operating and maintenance manuals; extensive assistance in the utilization or start up; and training OWNER's personnel.
- Services after completion of the Construction Phase.
- Preparing to serve or serving as a consultant or witness in any legal or administrative proceeding or public hearing.
- Providing services normally furnished by OWNER.

2.2. If the parties agree, ENGINEER shall provide resident Project representation under ENGINEER's supervision which will be paid for by OWNER as indicated in the Letter Agreement and which will be intended to give OWNER further assurance in respect of the finished work of Contractor(s), but will not involve ENGINEER in the construction means, methods, techniques, sequences or procedures or safety precautions or programs nor provide to OWNER any guarantee by ENGINEER of the accuracy, quality or timeliness of Contractor(s) performance.

SECTION 3—OWNER'S RESPONSIBILITIES

3.1. OWNER shall designate a person to act with authority on his behalf in respect of all aspects of the Project, shall examine and respond promptly to ENGINEER's submissions, and shall give prompt written notice to ENGINEER whenever he observes or otherwise becomes aware of any defect in the Project.

3.2. OWNER shall also do the following and pay all costs incident thereto:

- Furnish to ENGINEER core borings, probings and subsurface explorations, hydrographic surveys, laboratory tests and inspections of samples, materials and equipment and similar data; appropriate professional interpretations of all of the foregoing; property, boundary, easement, right-of-way, topographic and utility surveys and property descriptions; zoning and deed restrictions; all of which ENGINEER may rely upon in performing his services.
- Guarantee access to and make all provisions for ENGINEER to enter upon public and private property.
- Provide such legal, accounting, independent cost estimating and insurance counseling services as may be required for the Project, and any auditing service required in respect of Contractor(s) applications for payment.
- Furnish approvals and permits from all governmental authorities having jurisdiction over the Project.

3.3. OWNER shall pay all costs incident to obtaining bids or proposals from Contractor(s).

SECTION 4—MEANING OF TERMS

4.1. As used herein the term "this Agreement" refers to the Letter Agreement to which these General Provisions are attached and these General Provisions, as if they were part of one and the same document.

4.2. The construction cost of the entire Project (herein referred to as "Construction Cost") means the total cost of the entire Project to OWNER, but it will not include ENGINEER's compensation and expenses, the cost of land, rights-of-way, or compensation for or damages to properties unless this Agreement so specifies, nor will it include OWNER's legal, accounting, insurance counseling or auditing services, or interest and financing charges incurred in connection with the Project. When Construction Cost is used as a basis for payment it will be based on one of the following sources with precedence in the order listed:

4.2.1. For completed construction, the total cost of all work performed as designed or specified by ENGINEER.

4.2.2. For work not constructed, the lowest bona fide bid received from a qualified bidder for such work; or if the work is not bid, the lowest bona fide negotiated proposal for such work.

4.2.3. For work for which no such bid or proposal is received, ENGINEER's most recent opinion of probable Project Cost.

Labor furnished by OWNER for the Project will be included in the Construction Cost at current market rates including a reasonable allowance for overhead and profit. Materials and equipment furnished by OWNER will be included at current market prices except used materials

and equipment will be included as if purchased new for the Project. No deduction is to be made from ENGINEER's compensation on account of any penalty, liquidated damages, or other amounts withheld from payments to Contractor(s).

4.3. The payroll costs used as a basis for payment mean the salaries and wages paid to all personnel engaged directly on the Project, including, but not limited to, engineers, architects, surveyors, designers, draftsmen, specification writers, estimators, other technical personnel, stenographers, typists and clerks; plus the cost of customary and statutory benefits including, but not limited to, social security contributions, unemployment, excise and payroll taxes, workmen's compensation, health and retirement benefits, sick leave, vacation and holiday pay applicable thereto. For the purposes of this Agreement, the principals of ENGINEER and their hourly payroll costs are:

The amount of customary and statutory benefits of all other personnel will be considered equal to 25% of salaries and wages.

4.4. Reimbursable expenses mean the actual expenses incurred directly or indirectly in connection with the Project for: transportation and subsistence incidental thereto; obtaining bids or proposals from Contractor(s); furnishing and maintaining field office facilities; subsistence and transportation of Resident Project Representatives and their assistants; toll telephone calls and telegrams; reproduction of reports, Drawings and Specifications, and similar Project-related items in addition to those required under Section 1; computer time including an appropriate charge for previously established programs; and, if authorized in advance by OWNER, overtime work requiring higher than regular rates.

SECTION 5—MISCELLANEOUS

5.1. Reuse of Documents.

All documents including Drawings and Specifications furnished by ENGINEER pursuant to this Agreement are instruments of his services in respect of the Project. They are not intended or represented to be suitable for reuse by OWNER or others on extensions of the Project or on any other project. Any reuse without specific written verification or adaptation by ENGINEER will be at OWNER's sole risk and without liability or legal exposure to ENGINEER, and OWNER shall indemnify and hold harmless ENGINEER from all claims, damages, losses and expenses including attorneys' fees arising out of or resulting therefrom. Any such verification or adaptation will entitle ENGINEER to further compensation at rates to be agreed upon by OWNER and ENGINEER.

5.2. Estimates of Cost.

Since ENGINEER has no control over the cost of labor, materials or equipment or over Contractor(s)' methods of determining prices, or over competitive bidding or market conditions, his opinions of probable Project Cost provided for herein are to be made on the basis of his experience and qualifications and represent his best judgment as a design professional familiar with the construction industry, but ENGINEER cannot and does not guarantee that proposals, bids or the Construction Costs will not vary from opinions of probable cost prepared by him. If

prior to the Bidding or Negotiating Phase OWNER wishes greater assurance as to the Construction Cost he shall employ an independent cost estimator as provided in paragraph 3.2. Engineering services to modify the Contract Documents to bring the Construction Cost within any limitation established by OWNER will be considered Additional Services and paid for as such by OWNER.

5.3. Late Payment.

If OWNER fails to make any payment due ENGINEER for services and expenses within sixty days after receipt of ENGINEER's bill therefor, the amounts due ENGINEER shall include a charge at the rate of 1% per month from said sixtieth day; and in addition ENGINEER may, after giving seven days' written notice to OWNER, suspend services under this Agreement until he has been paid in full all amounts due him for services and expenses.

5.4. Arbitration.

5.4.1. All claims, counter-claims, disputes and other matters in question between the parties hereto arising out of or relating to this Agreement or the breach thereof will be decided by arbitration in accordance with the Construction Industry Arbitration Rules of the American Arbitration Association then obtaining, subject to the limitations stated in paragraphs 5.4.3 and 5.4.4 below. This agreement so to arbitrate and any other agreement or consent to arbitrate entered into in accordance therewith as provided below, will be specifically enforceable under the prevailing law of any court having jurisdiction.

5.4.2. Notice of demand for arbitration must be filed in writing with the other parties to this Agreement and with the American Arbitration Association. The demand must be made within a reasonable time after the claim, dispute or other matter in question has arisen. In no event may the demand for arbitration be made after the time when institution of legal or equitable proceedings based on such claim, dispute or other matter in question would be barred by the applicable statute of limitations.

5.4.3. All demands for arbitration and all answering statements thereto which include any monetary claim must contain a statement that the total sum or value in controversy as alleged by the party making such demand or answering statement is not more than \$200,000 (exclusive of interest and costs). The arbitrators will not have jurisdiction, power or authority to consider, or make findings (except in denial of their own jurisdiction) concerning any claim, counter-claim, dispute or other matter in question where the

amount in controversy thereof is more than \$200,000 (exclusive of interest and costs) or to render a monetary award in response thereto against any party which totals more than \$200,000 (exclusive of interest and costs).

5.4.4. No arbitration arising out of, or relating to, this Agreement may include, by consolidation, joinder or in any other manner, any additional party not a party to this Agreement.

5.4.5. By written consent signed by all the parties to this Agreement and containing a specific reference hereto, the limitations and restrictions contained in paragraphs 5.4.3 and 5.4.4 may be waived in whole or in part as to any claim, counter-claim, dispute or other matter specifically described in such consent. No consent to arbitration in respect of a specifically described claim, counter-claim, dispute or other matter in question will constitute consent to arbitrate any other claim, counter-claim, dispute or other matter in question which is not specifically described in such consent or in which the sum or value in controversy exceeds \$200,000 (exclusive of interest and costs) or which is with any party not specifically described therein.

5.4.6. The award rendered by the arbitrators will be final, not subject to appeal, and judgment may be entered upon it in any court having jurisdiction thereof.

5.5. Termination.

This Agreement is subject to termination by OWNER or ENGINEER should the other fail to perform its obligations hereunder. In the event of any termination, ENGINEER will be paid for all services rendered to the date of termination, all reimbursable expenses and reimbursable termination expenses.

5.6. Successor and Assigns.

OWNER and ENGINEER each binds himself and his partners, successors, executors, administrators and assigns to the other party of this Agreement and to the partners, successors, executors, administrators and assigns of such other party, in respect to all covenants of this Agreement; except as above, neither OWNER nor ENGINEER shall assign, sublet or transfer his interest in this Agreement without the written consent of the other. Nothing herein shall be construed as creating any personal liability on the part of any officer or agent of any public body which may be a party hereto, nor shall it be construed as giving any rights or benefits hereunder to anyone other than OWNER and ENGINEER.

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 - Major Engineering/Architectural Projects
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 - Organization Chart
 - Resumes of Key Project Team
- V. URS BROCHURES AND ANNUAL REPORTS

URS

Principal Locations

Corporate Headquarters

URS Corporation
155 Bovet Road
San Mateo, California 94402
415-574-5000
Telex 331340
Cable: URSCORP

United States

150 E. 42nd Street
New York, New York 10017
212-953-8600

136 Summit Avenue
Montvale, New Jersey 07645
201-573-1100

8700 Stemmons Freeway
Dallas, Texas 75247
214-630-3500

3607 Manor Road
Austin, Texas 78723
512-926-7700

3955 East Exposition Avenue
Denver, Colorado 80209
303-744-1861

130 Jessie Street
San Francisco, California 94105
415-397-2525

9225 Ward Parkway
Kansas City, Missouri 64114
816-333-1400

The Fourth & Vine Building
Seattle, Washington 98121
206-623-6000

North 1522 Washington
Spokane, Washington 99201
509-326-6650

1601 Tonne Road
Elk Grove Village, Illinois 60007
312-593-1790

3501 N. Causeway Boulevard
Metairie, Louisiana 70002
504-837-3976

Map Legend

- Principal Offices
- Branch Offices

625 Delaware Avenue
Buffalo, New York 14202
716-883-5525

1854 South Alvernon Way
Tucson, Arizona 85711
602-747-3332

3611 North Black Canyon
Highway
Phoenix, Arizona 80015
602-264-2430

1164 Bishop Street, Suite 909
Honolulu, Hawaii 96813
808-533-3861

1701 N. Fort Myer Drive
Arlington, Virginia 22209
703-524-2277

2765 South Highland Drive
Las Vegas, Nevada 89102
702-734-1193

1225 Tongass Avenue
Ketchikan, Alaska 99901
907-225-6415



11. SF 254

URS

URS Company
3955 E. Exposition Ave.
Denver, Colorado 80209

Form 254

**Architect
Engineer
and
Related
Services
Questionnaire**

1978

STANDARD
FORM (SF)

254

Architect-Engineer
and Related Services
Questionnaire

1. Firm Name / Business Address:

URS COMPANY
3955 E. Exposition Avenue
Denver, Colorado 802091a. Submittal is for ☐ Parent Company ☒ Branch Office2. Year Present Firm
Established:

1953

3. Date Prepared:

Jan. 15, 1978

4. Type of Ownership:

4a. Minority Owned ☐ yes ☒ no

5. Name of Parent Company, if any:

URS Corporation
155 Bovet Road
San Mateo, California 94402

5a. Former Firm Name(s), if any, and Year(s) Established:

URS/The Ken R. White Company (1972)
The Ken R. White Company (1964)
Ken R. White Consulting Engineering, Inc. (1961)

6. Names of not more than Two Principals to Contact: Title / Telephone

- 1) Robert C. McWhinnie, President (303) 744-1861
-
- 2) Stephen A. Holt, Principal Engineer (303) 744-1861

7. Present Offices: City / State / Telephone / No. Personnel Each Office

7a. Total Personnel 93

URS Company, 3955 E. Exposition Avenue, Denver, Colorado 80209, (303) 744-1861 76

URS Company/Hawaii, 1164 Bishop Street, Suite 909, Honolulu, Hawaii 96813, (808) 533-3861 17
Edward C. Stevenson, Vice President

8. Personnel by Discipline:

9 Administrative
6 Architects
12 Chemical Engineers
2 Civil Engineering Inspectors
10 Draftsmen
Ecologists
Economists

3 Electrical Engineers
Estimators
Geologists
2 Hydrologists
Interior Designers
2 Landscape Architects
6 Mechanical Engineers
Mining Engineers

4 Oceanographers
Planners: Urban/Regional
3 Sanitary Engineers
Soils Engineers
1 Specification Writers
5 Structural Engineers
12 Surveyors
5 Transportation Engineers

9 Industrial, Structural
& Civil Designers
2 Photoqrammetrists

9. Summary of Professional Services Fees

Received: (insert index number)

Last 5 Years (most recent year first)

19 77	19 76	19 75	19 74	19 73
2	2	3	2	2
6	6	6	6	6

Direct Federal contract work, including overseas
All other domestic work
All other foreign work*

*Firms interested in foreign work, but without such experience, check here: ☒.

Ranges of Professional Services Fees

INDEX

1. Less than \$100,000
2. \$100,000 to \$250,000
3. \$250,000 to \$500,000
4. \$500,000 to \$1 million
5. \$1 million to \$2 million
6. \$2 million to \$5 million
7. \$5 million to \$10 million
8. \$10 million or greater

Experience Profile Code Numbers for use with questions 10 and 11

001 Acoustics; Noise Abatement	041 Graphic Design	083 Power Generation, Transmission, Distribution
002 Aerial Photogrammetry	042 Harbors, Jetties; Piers; Ship Terminal Facilities	084 Prisons & Correctional Facilities
003 Agricultural Development; Grain Storage; Farm Mechanization	043 Heating; Ventilating; Air Conditioning	085 Product, Machine & Equipment Design
004 Air Pollution Control	044 Health Systems Planning	086 Radar; Sonar; Radio & Radar Telescopes
005 Airports; Navalds; Airport Lighting; Aircraft Fueling	045 Highrise; Air-Rights-Type Buildings	087 Railroad; Rapid Transit
006 Airports; Terminals & Hangars; Freight Handling	046 Highways; Streets; Airfield Paving; Parking Lots	088 Recreation Facilities (<i>Parks, Marinas, Etc.</i>)
007 Arctic Facilities	047 Historical Preservation	089 Rehabilitation (<i>Buildings; Structures; Facilities</i>)
008 Auditoriums & Theatres	048 Hospitals & Medical Facilities	090 Resource Recovery; Recycling
009 Automation; Controls; Instrumentation	049 Hotels; Motels	091 Radio Frequency Systems & Shieldings
010 Barracks; Dormitories	050 Housing (<i>Residential, Multi-Family; Apartments; Condominiums</i>)	092 Rivers; Canals; Waterways; Flood Control
011 Bridges	051 Hydraulics & Pneumatics	093 Safety Engineering; Accident Studies; OSHA Studies
012 Cemeteries (<i>Planning & Relocation</i>)	052 Industrial Buildings; Manufacturing Plants	094 Security Systems; Intruder & Smoke Detection
013 Chemical Processing & Storage	053 Industrial Processes; Quality Control	095 Seismic Designs & Studies
014 Churches; Chapels	054 Industrial Waste Treatment	096 Sewage Collection, Treatment and Disposal
015 Codes; Standards; Ordinances	055 Interior Design; Space Planning	097 Soils & Geologic Studies; Foundations
016 Cold Storage; Refrigeration; Fast Freeze	056 Irrigation; Drainage	098 Solar Energy Utilization
017 Commercial Buildings (<i>low rise</i>); Shopping Centers	057 Judicial and Courtroom Facilities	099 Solid Wastes; Incineration; Land Fill
018 Communications Systems; TV; Microwave	058 Laboratories; Medical Research Facilities	100 Special Environments; Clean Rooms, Etc.
019 Computer Facilities; Computer Service	059 Landscape Architecture	101 Structural Design; Special Structures
020 Conservation and Resource Management	060 Libraries; Museums; Galleries	102 Surveying; Planning; Mapping; Flood Plain Studies
021 Construction Management	061 Lighting (<i>Interiors; Display; Theatre, Etc.</i>)	103 Swimming Pools
022 Corrosion Control; Cathodic Protection; Electrolysis	062 Lighting (<i>Exteriors; Streets; Memorials; Athletic Fields, Etc.</i>)	104 Storm Water Handling & Facilities
023 Cost Estimating	063 Materials Handling Systems; Conveyors; Sorters	105 Telephone Systems (<i>Rural; Mobile; Intercom, Etc.</i>)
024 Dams (<i>Concrete; Arch</i>)	064 Metallurgy	106 Testing & Inspection Services
025 Dams (<i>Earth; Rock</i>); Dikes; Levees	065 Microclimatology; Tropical Engineering	107 Traffic & Transportation Engineering
026 Desalinization (<i>Process & Facilities</i>)	066 Military Design Standards	108 Towers (<i>Self-Supporting & Guyed Systems</i>)
027 Dining Halls; Clubs; Restaurants	067 Mining & Mineralogy	109 Tunnels & Subways
028 Ecological & Archeological Investigations	068 Missile Facilities (<i>Silos; Fuels; Transport</i>)	110 Urban Renewal; Community Development
029 Educational Facilities; Classrooms	069 Modular Systems Design; Pre-Fabricated Structures or Components	111 Utilities (<i>Gas & Steam</i>)
030 Electronics	070 Naval Architecture; Off-Shore Platforms	112 Value Analysis; Life-Cycle Costing
031 Elevators; Escalators; People-Movers	071 Nuclear Facilities; Nuclear Shielding	113 Warehouses & Depots
032 Energy Conservation; New Energy Sources	072 Office Buildings; Industrial Parks	114 Water Resources; Hydrology; Ground Water
033 Environmental Impact Studies, Assessments or Statements	073 Oceanographic Engineering	115 Water Supply, Treatment and Distribution
034 Fallout Shelters; Blast-Resistant Design	074 Ordnance; Munitions; Special Weapons	116 Wind Tunnels; Research/Testing Facilities Design
035 Field Houses; Gyms; Stadiums	075 Petroleum Exploration; Refining	117 Zoning; Land Use Studies
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10. Profile of Firm's Project Experience, Last 5 Years

Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)	Profile Code	Number of Projects	Total Gross Fees (in thousands)
1) 004	17	2,002	11) 046	48	5,421	21) 087	15	1,893
2) 005	7	1,212	12) 047	3	168	22) 087	15	1,893
3) 006	4	850	13) 050	7	272	23) 089	125	1,720
4) 011	33	1,891	14) 056	17	867	24) 092	5	483
5) 019	3	121	15) 059	23	411	25) 102	95	1,168
6) 029	100	1,471	16) 063	21	1,281	26) 107	37	2,334
7) 032	6	1,083	17) 072	12	2,450	27) 111	12	241
8) 033	12	540	18) 076	5	360	28) 113	4	387
9) 039	4	214	19) 078	16	308	29) 114	15	743
10) 043	25	1,074	20) 079	17	748	30) 115	23	869

11. Project Examples, Last 5 Years

Profile Code	"P", "C", "JV", or "IE"	Project Name and Location	Owner Name and Address	Cost of Work (in thousands)	Completion Date (Actual or Estimated)
004	P	¹ Air Pollution Control System Studies & Design for Coal Fired Power Plant Pueblo, Colorado	Southern Colorado Power Division of Central Telephone & Utilities Corp.	3,000	1978
005	P	² Stapleton International Airport Denver, Colorado	City and County of Denver Denver, Colorado	23,000	1976
006	P	³ Airport Terminal Studies & Design Honolulu International Airport	Hawaii Department of AIR Honolulu, Hawaii	35,000	1978
011	P	⁴ 6th & 9th Street Bridge Design Boulder, Colorado	City of Boulder Boulder, Colorado	50 (fee)	1978
019	P	⁵ Buckley Computer Facility & Office Buckley ANG Base, Colorado	SAMS0-USAF Los Angeles, California	990	1978
029	P	⁶ School Remodeling Programs for approximately 80 buildings Denver, Colorado	Denver Public Schools 900 Grant Street Denver, Colorado 80203	8,000	18-1974 16-1975 12-1976 30-1977
032	P	⁷ Minn-Dak Sugar Plant Boiler Fuel Conversion to Coal Wahpeton, North Dakota	Minn-Dak Farmers Cooperative Wahpeton, North Dakota	8,500	1977

033	P	⁸ Power Plant Siting and Power Line Corridor Location Studies Colorado	Public Service Company of Colorado	63 (fee)	1976
039	P	⁹ Vehicle Maintenance Facility Stapleton International Airport Denver, Colorado	City and County of Denver Denver, Colorado	32 (fee)	1978
043	P	¹⁰ Bartow Hospital Bartow, Florida	Hewitt & Royer, Architects Kansas City, Missouri	82 (fee)	1977
046	P	¹¹ SH-470 near Denver, Colorado	Colorado Department of Highways Denver, Colorado	985 (fee)	1979
047	P	¹² Bent's Old Fort National Historic Site Restoration near LaJunta, Colorado	National Park Service 755 Parfet Street Denver, Colorado	1,350	1976
050	P	¹³ Low Income Attached Housing "Design Competition Winner" Denver, Colorado	Denver Housing Authority Denver, Colorado	900	1978
056	P	¹⁴ Sloan's Lake Drainage Master Plan Preliminary & Final Design Denver, Colorado	Urban Drainage & Flood Control District Denver, Colorado	200 (fee)	1978
059	P	¹⁵ Landscape Planning & Design All-City Athletic Facility Denver, Colorado	Denver Public Schools Denver, Colorado	850	1978
063	P	¹⁶ New Cement Plant Design & Materials Handling Systems Portland, Colorado	Ideal Cement Company Denver, Colorado	30,000	1975
072	P	¹⁷ Blue Cross/Blue Shield Regional Headquarters Office Building Denver, Colorado	Colorado Hospital Service/Colorado Medical Service Denver, Colorado	22,000	1975
076	P	¹⁸ Buckley Field Jet Fuel Storage Facilities Denver, Colorado	Department of the Air Force Buckley ANG Base, Colorado	1,260	1977
078	P	¹⁹ Ute Mountain Reservation Overall Development Plan Towaoc, Colorado	Horace Garcia Ute Mountain Tribe - BIA Towaoc, Colorado (303) 565-3751	20 (fee)	1976

079	P	20 Transportation Test Center Facilities Master Plan Pueblo, Colorado	U.S. Department of Transportation Federal Railroad Administration Washington, D. C.	115 (fee)	1975
087	P	21 Colorado Coal Train Study & Statewide Rail Plan - PL94-210 Denver, Colorado	John Dolan Colorado Department of Highways Denver, Colorado (303) 757-9261	198 (fee)	1978
087	P	22 Proctor Creek Line-Perry Homes Station Atlanta, Georgia	Alan Kiepper, Director MARTA Atlanta, Georgia	12,000	1976
089	P	23 Ute Mountain Recreation Building Rehabilitation Towaoc, Colorado	Ute Mountain Indian Tribe Towaoc, Colorado	50 (fee)	1978
092	P	24 Boulder Creek Excavated Floodway Boulder, Colorado	City of Boulder, Colorado	93 (fee)	1978
098	P	25 Solar Project Analysis & Prototype Design for Visitor's Center Western United States--Region VI	U.S. Fish & Wildlife Denver, Colorado	175 (fee)	1978
102	P	26 Narrows Dam Project Design Data Gathering Ft. Morgan, Colorado	U.S. Bureau of Reclamation Denver, Colorado	226 (fee)	1977
107	P	27 Commuter Rail Transit Study Denver, Colorado	Regional Transportation District Denver, Colorado	72 (fee)	1977
111	P	28 Steam System Studies & Design Colorado, Wyoming & California	Holly Sugar Company Colorado Springs, Colorado	35 (fee)	1977
114	P	29 Water Resources Management & Drought Planning Denver, Colorado	Colorado State Engineer Denver, Colorado	34 (fee)	1977
115	JV	30 Little Rock, Arkansas Metro Water Master Plan	Little Rock District Corps of Engineers Little Rock, Arkansas	178 (fee)	1978
12. The foregoing is a statement of facts Signature: <i>Robert C. McWhinnie</i>			Typed Name and Title: Robert C. McWhinnie, President Date: 15 January 1978		

has an extensive depth of experience in remodeling and modernizing facilities beyond that of the normal contracting firm. Representative projects which indicate this experience include:

- **Denver Public School Board Program**

DPS has a continuing contract with DPS for remodel to their existing facilities on a work order basis. Over 20 projects have been completed in the last three years for major and minor rehabilitation work.

A listing of projects completed is attached.

- **North High School, Denver, Colorado**

DPS conducted a complete facility survey and program development for the future renovation/modernization of North High School. Project is being held pending funding.

III. PROJECT EXPERIENCE

- **Renovation of heating and ventilating systems at Denver City Hall, Denver, Colorado**

- **Renovation of factory manufacturing facility for Harris Rubber Company following an extensive energy analysis study. (Analogous)**

- **Refurbish to computer laboratory, Buckley Air National Guard Base, Denver, Colorado**

- **Refurbish to warehouse and commissary, Lowry Air Force Base, Denver, Colorado**

- **1986 22 Office Remodel, Denver, Colorado**

- **U.S. Department of Health, Education & Welfare - FPMR Health Services Agreement for remodel to existing health care facilities, Western Region**

- **DPS, Public Services, Denver, Colorado**
FPMR Health Services Agreement for remodel of existing mental facilities in the Denver area

- **Hospital Refurbishing & Modernization**
 - **Lawson Hospital, Boston, Florida**
 - **Franklin County Hospital, Stillwater, Wyoming**
 - **Grady Agricultural Center, Xenia, Ohio**

- **Colorado State Highway Department, Executive Office**
 - **Apex, Denver, Colorado**

REMODEL/RENOVATION

URS can provide a depth of experience in remodeling and modernization projects beyond that of the normal consulting firm. Representative projects which indicate this experience include:

- Denver Public School Remodel Program

URS has a continuing contract with DPS for remodel to their existing facilities on a work order basis. Over 80 projects have been completed in the last three years for major and minor rehabilitation work.

A listing of projects completed is attached.

- North High School, Denver, Colorado

URS conducted a complete facility survey and program development for the future renovation/addition to North High School. Project is being held pending funding.

- Renovation of heating and ventilating systems at Denver City Jail, Denver, Colorado

- Renovation of 4-story manufacturing facility for Gates Rubber Company following an extensive energy analysis study. (In-progress)

- Addition to computer laboratory, Buckley Air National Guard Base, Denver, Colorado

- Addition to warehouse and commissary, Lowry Air Force Base, Denver, Colorado

- KRMA TV Office Remodel, Denver, Colorado

- U.S. Department of Health, Education & Welfare - FY1978 Basic Services Agreement for remodel to existing Indian Health Care facilities, Western Region

- U.S. Postal Service, Denver, Colorado
FY1978 Basic Services Agreement for remodel to existing postal facilities in the Denver area

- Hospital Retrofitting & Modernization:
 - Bartow Hospital, Bartow, Florida
 - Campbell County Hospital, Gillette, Wyoming
 - Greene Memorial Center, Xenia, Ohio

- Colorado State Highway Department, Executive Office Remodel, Denver, Colorado

RELEVANT EXPERIENCE

Basic Agreement - Denver Public Schools

URS has had a Basic Agreement with the Denver Public School System to review the structural design for all new schools and all modifications to existing schools for about twenty years, and has had a Basic Agreement for the architectural/engineering design of major and minor remodeling, including handicap access modifications, for the past four years. This work has included nearly 100 projects, of which the following are representative:

Design modifications to provide access for the handicapped at Lincoln, George Washington, Manual, and West High Schools, Place Junior High School, Bromwell, Carson, Centennial, Philips, Sabin, and Greenlee Elementary Schools. The modifications include: Access symbol to designate wheelchair access areas; wider doorways; ramps with appropriate gradient; modified lavatories; lower drinking fountains; raised letters or Braille identifying specific rooms. Particular attention is given to: Adequate circulation throughout the library and in lunchrooms for wheelchair access through serving lines; lab and study stations of appropriate height; locker room facilities and shower stalls to accommodate wheelchair individuals.

Renovation of I.M.C. Rooms (Library) including mechanical, electrical, and structural systems, ceilings, floors, and aesthetic features at some thirty elementary and junior high schools.

Renovation of laboratory facilities including heating, plumbing, electrical system, ceilings, and floors at Lake, Cole, Morey, and Baker Junior High Schools.

Renovation of home economics and manual training facilities including heating, wiring, plumbing, ventilation, floors, ceilings, and cabinets at East, West, North, South, and Manual High Schools.

Structural investigation, analysis and design of significant remedial measures for the structural systems at Byers, Hamilton, Morey, and Lake Junior High Schools, South High School, and Balarat Educational Center.

Planning, concept design, and cost estimates to renovate the Old Denver North High School to include air conditioning in the administrative area, and major structural, HVAC, and architectural modifications to the entire building.

Planning and design of landscaping and lawn sprinkler systems at a dozen grade and junior high schools.

Design of new lighting systems and acoustical tile at 18 schools including all new lighting at South High School.

Design of a new pressbox facility at All City athletic field.

RELEVANT EXPERIENCE

References: Remodel Work - Thayne McKnight
Supervisor, Facility Planning
(303) 837-1000

Structural Work - Stanley Stekel
Director of Engineering
(303) 837-1000

DENVER PUBLIC SCHOOLS

Remodel Program

PROJECT NO.	SCHOOL	DESCRIPTION
6011	Lake Jr. High School	Addition & Alteration
6047	Beach Court Elementary School	IMC Remodel
7068	Fairview Elementary School	IMC Remodel
6049	Asbury Elementary School	IMC Remodel
6050	Moore Elementary School	IMC Remodel
6051	Bryant Webster Elementary School	IMC Remodel
6058	Montclair Elementary School	IMC Remodel
6059	Belmont Elementary School	IMC Remodel
6062	Garden Place Elementary School	IMC Remodel
6063	South High School	Counseling Area/Photo Lab
6039	Gilpin Elementary School	IMC Remodel
6080	DPS Accoustical Ceiling Treatments	--
6081	Electrical Service	--
6082	DPS Lavatories	Electrical Modification
6083	General Remodel - 13 DPS Schools	--
6084	Baker Jr. High School	Science Room Remodel
6085	Merrill Jr. High School	Finish Room Addition
6086	Smiley Jr. High School	Casework Addition
6087	George Washington High School	Training Room Remodel
6088	J.F.K. High School	Woodshop & Finish Room
6089	West High School	Viewing Room Addition
6090	Kepner Jr. High School	IMC Remodel
6091	Remington Elementary School	Girls Shower Room Addition
6092	Westwood Elementary School	IMC Remodel
6095	Crofton Elementary School	IMC Remodel
6096	Rishel Jr. High School	IMC Remodel
6097	Kepner Jr. High School	IMC Remodel
6098	Hill Jr. High School	IMC Remodel
6099	Yuma Street Center	Test Kitchen & Lunchroom
6100	All-City Athletic Facility	Concession Stands
6102	Manual High School	IMC Remodel
6103	Sherman Elementary School	IMC Remodel
6105	Merrill Jr. High School	IMC Remodel
6109	Rosedale Elementary School	IMC Remodel
6110	George Washington High School	IMC Remodel
6111	Emily Griffith Opportunity School	Remodel
6112	Newton Elementary School	IMC Remodel
6113	Smith Elementary School	IMC Remodel
6114	Hamilton Jr. High School	IMC Remodel
6115	Teller Elementary School	Clinic Addition
6179	Merrill Jr. High School	Metal Welding Shop
7015	Harrington Elementary School	Stage Remodel
7042	Barnum Elementary School	IMC Remodel
7043	Lincoln Elementary School	IMC Remodel
7044	Washington Park Elementary School	IMC Remodel
7045	Boulevard Elementary School	IMC Remodel
7046	Fallis Elementary School	IMC Remodel
7047	Brown Elementary School	IMC Remodel

Remodel Program

PROJECT NO.	SCHOOL	DESCRIPTION
7048	Steele Elementary School	IMC Remodel
7049	Emerson Elementary School	IMC Remodel
7050	Ellsworth Elementary School	IMC Remodel
7058	Palmer Elementary School	IMC Remodel
7061	East High School	IMC Remodel
7067	Wyatt Elementary School	IMC Remodel
7068	Dennison Elementary School	IMC Remodel
7069	Force Elementary School	IMC Remodel
7070	Gust Elementary School	IMC Remodel
7071	Sabin Elementary School	IMC Remodel
7072	Valverde Elementary School	IMC Remodel
7073	Kunsmiller Jr. High School	IMC Remodel
7076	Stevens Elementary School	IMC Remodel
7093	Steck Elementary School	IMC Remodel
7101	Columbian Elementary School	IMC Remodel
7129	Lincoln Elementary School	Teacher's Lounge Remodel
7130	Godsman Elementary School	IMC Remodel
7131	Ashley Elementary School	IMC Remodel
7149	Carson Elementary School	IMC Remodel
7155	Edison Elementary School	IMC Remodel
8041	Ash Grove Elementary School	Teacher's Lounge Remodel
8042	Boulevard Elementary School	Teacher's Lounge Remodel
8043	Grant Junior High School	Counselor Office Remodel
8044	Palmer Elementary School	Office Remodel
8048	Boettcher Elementary School	Locker Room Remodel
8055	Hamilton Jr. High School	Office Remodel
8056	Goldrick Elementary School	Room Remodel
8057	Kunsmiller Jr. High School	Room Remodel
8058	Lincoln High School	Handicap Modifications
8059	George Washington High School	Handicap Modifications
8060	Manual High School	Handicap Modifications
8061	West High School	Handicap Modifications
8062	Place Junior High School	Handicap Modifications
8063	Brownell Elementary School	Handicap Modifications
8064	Carson Elementary School	Handicap Modifications
8065	Centennial Elementary School	Handicap Modifications
8066	Philips Elementary School	Handicap Modifications
8070	North High School	Locker Room Remodel
8071	Sabin Elementary School	Handicap Modifications
8072	Greenlee Elementary School	Handicap Modifications
8079	Kepner Junior High School	Locker Room Remodel
8080	Lake Junior High School	Stairwell Remodel
8081	Jefferson High School	Office Remodel
8084	George Washington High School	Room Remodel

DENVER PUBLIC SCHOOLS

STRUCTURAL DESIGN REVIEW AND ALTERATIONS

<u>Job Number</u>	<u>Description</u>
7022	Byers Jr. High - Stage Alterations
7011	Hamilton Investigation
6179	Merrill Jr. High
6130	Morey Jr. High - Alterations
6125	Eng. Services
6123	Valverde Elementary School
6118	Byers Jr. High School
6116	Balarat
6109	Rosedale
6101	South High School - Stage Repair
6100	South High School - Concession
6099	Yuma Street Center
6092	Westwood Elementary School
6087	George Washington High School
6062	Garden Place Elem. School
6059	Belmont Elementary School
6051	Bryant Webster Elementary School
6050	Moore Jr. High School
6047	Beach Court Elementary School
6022	North High School Study
6011	Lake Junior High School
5316	Morey Jr. High School
5071	Eagleton Elem. School
5069	Wyman Elementary School
5068	Valdez Elementary School
5052	Fox Building - Remodel
5051	Yuma Center - Remodel
5007	Eng. Service
7102	Morey Jr. Hi Vent. Alt.
7095	Montbello Jr-Sr. High School - Review
7061	East High School - Alterations
7076	Stevens - Alterations
7048	Steele Elementary School - Alterations
7046	Fallis Elementary School - Alterations
7043	Lincoln Elementary School - Alterations
7036	West High School - Auditorium Review
7024	McKinley Review

RELEVANT EXPERIENCE

Basic Service Agreement - U.S. Department of Health, Education & Welfare

URS is presently carrying out projects for HEW of both architectural and engineering nature, which include investigation and design of renovation of electrical, mechanical, civil, structural, and sanitary engineering; landscape and site work; and architectural-type projects in the eight-state Federal Region VIII. Current projects under this Basic Agreement include:

Indian Health Service Facility Remodels at:

The Crow Agency, Billings, Montana

Belcourt, North Dakota

Pine Ridge, South Dakota

Washakie Clinic, Wind River, Wyoming

Eagle Butte, South Dakota

Included among the remodel designs were provisions to install new x-ray units, lighting, shielding, security fencing, smoke detectors, and to repair and reseal parking lots.

Reference: Tom Moore
Regional Engineer
HEW - Denver
(303) 837-3385

RELEVANT EXPERIENCE

Basic Agreement - City of Denver

URS has had a Basic Agreement with the City and County of Denver for nearly twenty years for various architectural/engineering projects.

Recent projects under that Basic Agreement include:

Investigation, Emergency Repair, Supervision and Design of
Permanent Repair for Precast Decorative Panels
Denver General Hospital

Design of Remodel of Showers, Lavatories, and HVAC System
Denver County Jail

Design of Two Maintenance Buildings
Denver Stapleton Airport

The other projects have included surveying, site plans, drainage, structural investigations, bridge analysis and inspection, and many other A/E projects.

Miscellaneous surveying projects including section breakdown, subdivision layout and construction control, and utility location and construction control.

Bridge hydraulics, scour analysis, physical and design inspection, rating, and renovation design

Survey control and aerial mapping for parks, roads, streets, landfills, etc.

Miscellaneous civil design, drainage, subdivision plots, etc.

Design of fire station

Reference: John J. Stamm
Director of Design Engineering
City of Denver
(303) 575-3761

RELEVANT EXPERIENCE

Maintenance & Repair Projects - Lowry Air Force Base

URS was selected in 1977 to provide basic architectural/engineering services to Lowry Air Force Base. The following are projects which were included in that work for which the design has been completed. All of these design projects were completed within 60 days from notice to proceed.

Design of air conditioning systems, replace cooling tower to serve Buildings 359, 849, 905 and 995

Design of fire alarm system for Buildings 375 and 349

Design of automatic fire sprinkler systems for Buildings 373 and 1433

Design alteration to heating system in Building 1432

Design alteration to air conditioning system in Building 24

Design architectural alteration to the third floor of Building 379

Design of Gate House on 6th Avenue

Design of storm runoff detention pond system and discharge for the Accounting and Finance Center area

Design of site grading renovation around family housing area to correct flooding of basements

Reference: Ken Dolan
Base Civil Engineer's Office
(303/394-3311)

RELEVANT EXPERIENCE

Basic Agreement - National Park Service

URS has had a previous Basic Agreement (No. CX-2000-7-0035) with the National Park Service for various projects in the State of Colorado. Projects under that Basic Agreement included:

Rocky Mountain National Park

- Headquarters - Connection of Sewer to Upper Thompson Sewer District
- Glacier Basin Campground and Livery - Connection of Sewer to Upper Thompson Sewer District, and Power System Design
- Glacier Basin Livery - Power System
- Aspenglen - Connection of Sewer to Upper Thompson Sewer District
- Fall River Pass - Sewage Treatment Modifications
- Hidden Valley - Sewage Treatment Facilities
- Morain Park - Connection of Sewer to Upper Thompson Sewer District

Shadow Mountain National Recreation Area

- Stillwater Campground - Sanitation Facility
- Green Ridge and Shadow Mountain Campgrounds - Updating Sewer Systems

Bent's Old Fort

- Building Restoration
- Site Development

RELEVANT EXPERIENCE

Basic Agreement - Bureau of Indian Affairs

URS has provided Architectural/Engineering services under a previous Basic Agreement (No. W56-090) to the Bureau of Indian Affairs for various projects, including:

Umatilla Clinic - Feasibility Study
Umatilla, Oregon

Umatilla Office Building - Design
Umatilla, Oregon

Blackfeet Juvenile Correction Center - Design
Browning, Montana

Red Lake Reservation - Design of Overnight Holding Facility
Ponemah, Minnesota

Snowbird Dental Clinic - Design
Snowbird, North Carolina

Fire Station Design:
Hollywood, Florida
Big Cypress, Florida
Brighton, Florida

Office Addition Design:
Hollywood, Florida
Fort Thompson, South Dakota
Rosebud Agency, Rosebud, South Dakota

Wahpeton Elementary School Addition - Design
Wahpeton, North Dakota

Qualla Arts & Crafts Building - Design
Cherokee, North Carolina

Alaskan Villages Exterior Electrical Distribution
System - Ruby, Derring, Diomedes, Alaska

Ft. Apache Water & Sewer Treatment Improvements
and Sewage System Study
Whiteriver, Arizona

Eastern Nevada Sewage Treatment Improvement Program

Chippewa Cree Housing - Structural and Architectural
Investigation

Reference: Lowell Peterson, Bureau of Indian Affairs
Albuquerque, New Mexico
(505) 798-4896

RELEVANT EXPERIENCE

Basic Service Agreement - U.S. Fish and Wildlife Service

Architectural and engineering services for design of prototype visitors centers and headquarters buildings. Energy conservation and solar system feasibility studies and designs.

Reference: William Godby
Regional Engineer
U.S. Fish and Wildlife Service
(303) 234-4614

RELEVANT EXPERIENCE

Basic Service Agreement - Denver Regional Transportation District

Architectural and engineering services for design of facilities in support of the operation of the Regional Transportation District including:

Street and curb design

Park and Ride facility design

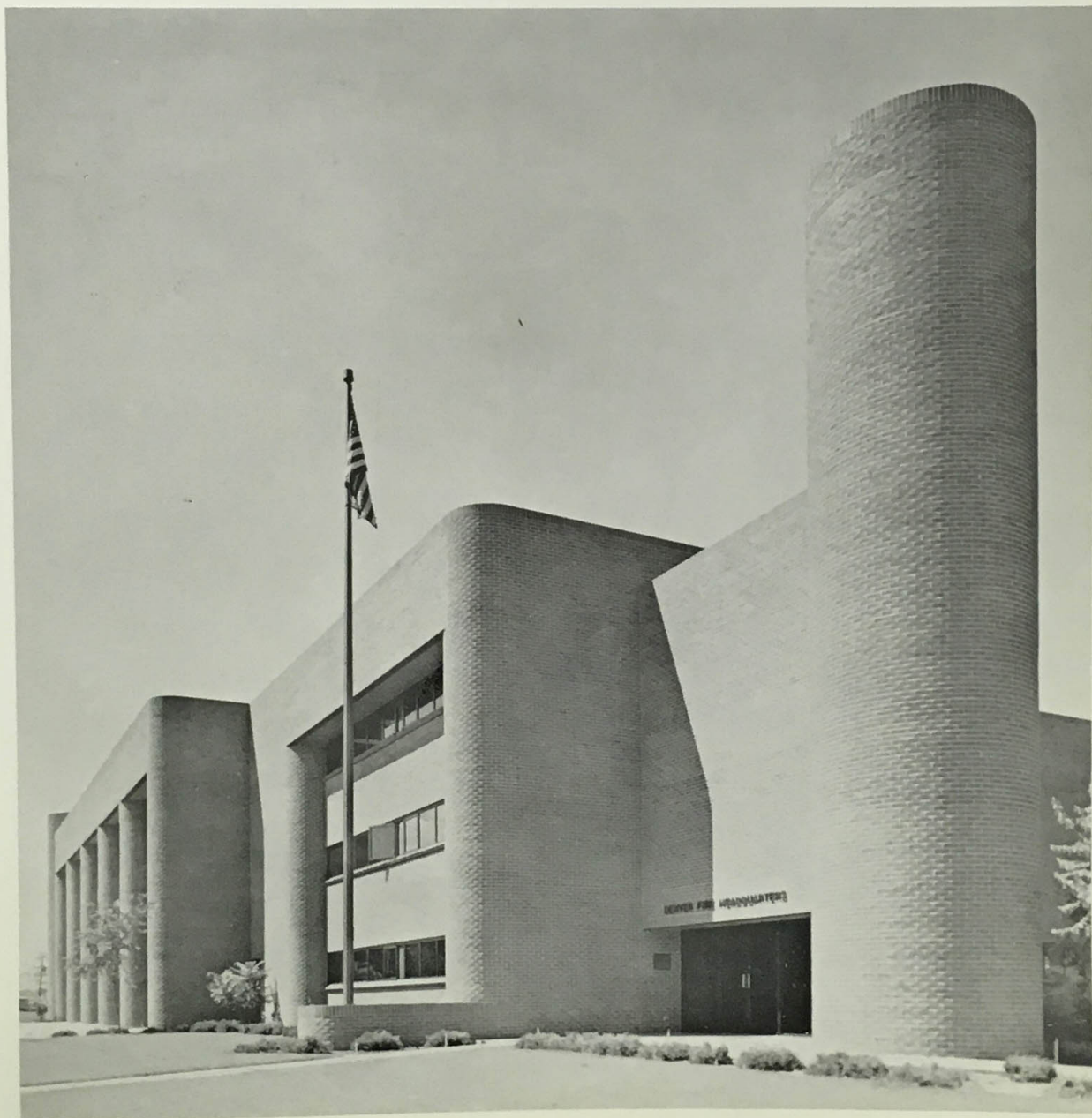
Bus stop shelters

Traffic and traffic control design

Transportation planning

Reference: Dale Hartzler, Contracting Officer
Regional Transportation District
1325 South Colorado Boulevard
Denver, Colorado 80222
(303) 759-1000

**Denver Fire Headquarters
Denver, Colorado**



Denver Fire Headquarters Denver, Colorado

The fire headquarters occupies a centrally located site near Denver's downtown area. It was designed to house five fire fighting companies, all administrative, arson and fire prevention bureau facilities for the City and County of Denver and provide flexibility for future administrative expansion.

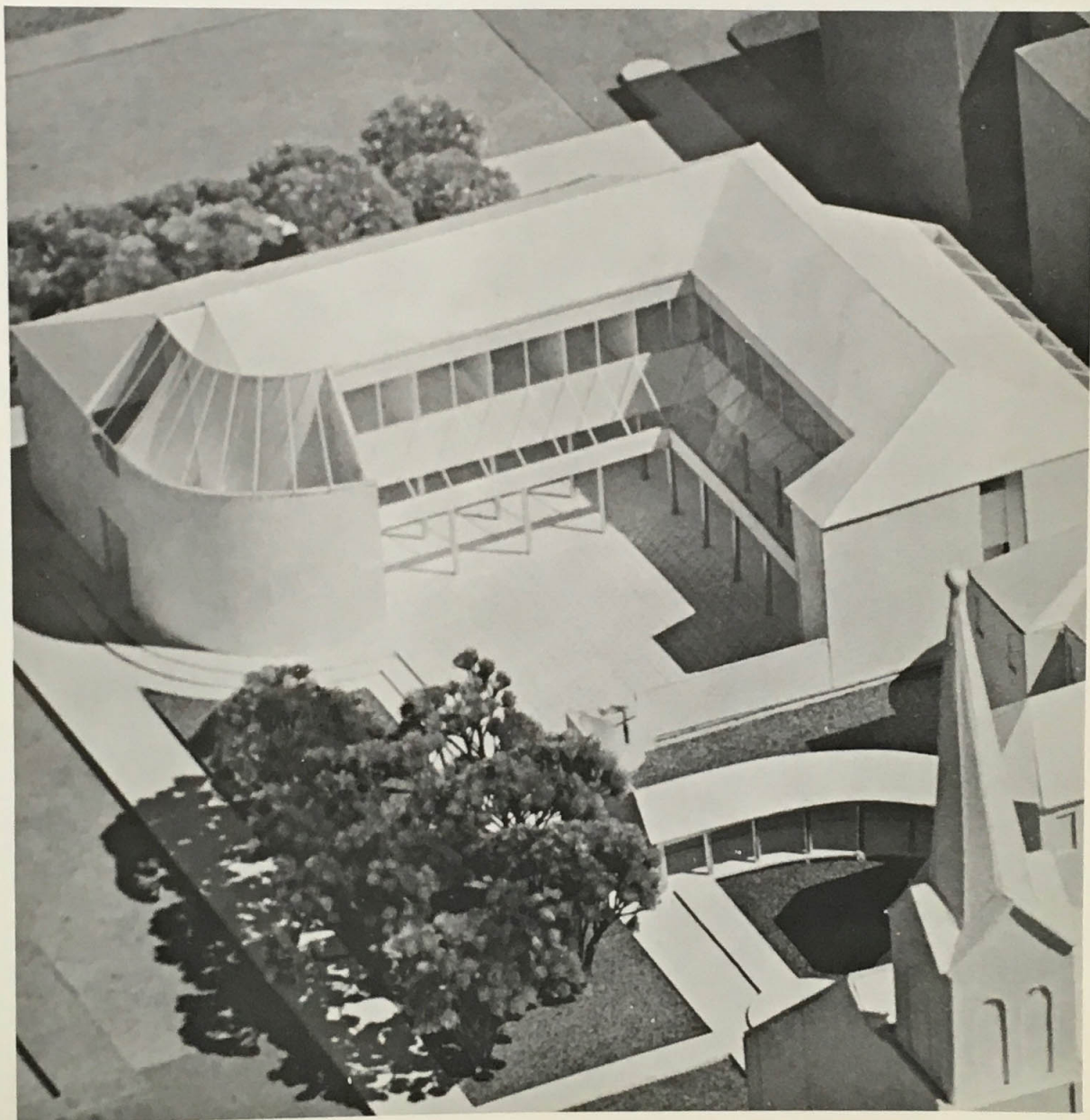
The 3-story structural steel and masonry structure derives its basic form from its function. The ground floor contains the administrative offices for Denver, dormitories, kitchen, recreation, storage, equipment and garage areas for five full fire fighting companies. The third floor is comprised of the Arson Bureau, Fire Prevention Bureau and General Offices. The second floor contains mechanical, lunchroom and service facilities for both the ground and third floors.

The exterior and interior building materials were selected for long-life and efficiency. The quality of the Denver Fire Department and their recognition as one of the nation's most contemporary fire departments is reflected in the building's design.

Project Status: Completed 1975
Cost: \$1,300,000



**St. Francis Interfaith Center
Denver, Colorado**



St. Francis Interfaith Center Denver, Colorado

The program for this project called for an ecumenical center to be used primarily by students as part of the historic Saint Elizabeth Church and Rectory at the edge of downtown Denver in Auraria Higher Education Center.

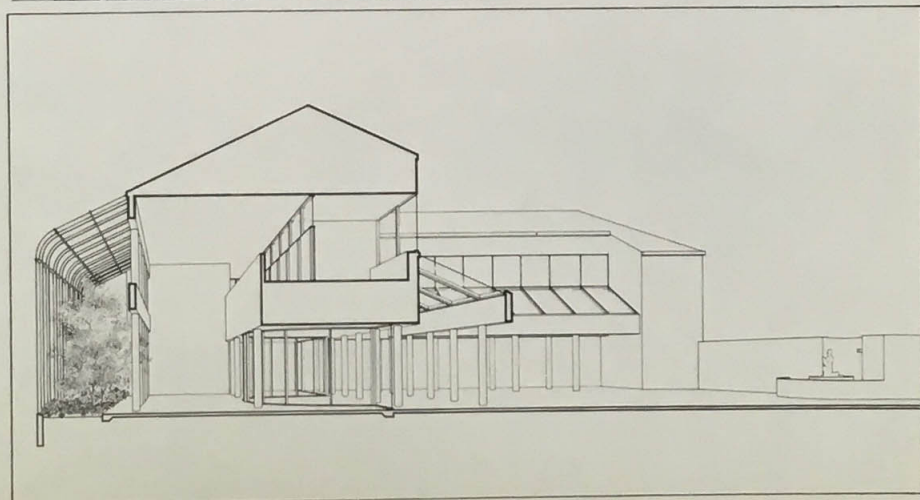
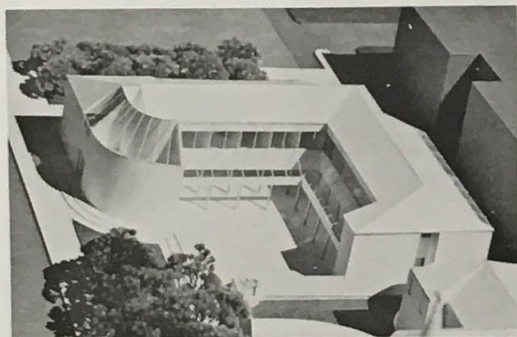
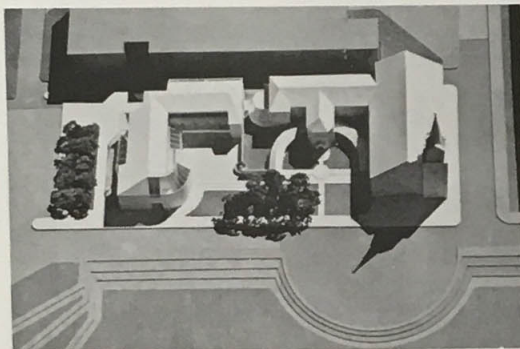
The building is designed to complement and enhance the existing church and rectory, and to form a unified and coherent complex. The church was built in 1896, and the rectory was constructed 30 years later.

The 2-story building, matching the existing building in height, roof slope and material, is placed in an L-shape to enclose the space within the complex and form a separate courtyard which will be paved with rich, colorful mosaic to appear like a tapestry.

Two sides of the courtyard are embraced by a glass-covered portico protecting the meeting and dining room. The ground floor is designed to accommodate social and educational activities in private, semi-private and public spaces both inside and outside the building. The meeting and dining room is designed with low and high ceiling, and a strip of planting area with greenhouse effect to create a variety of atmosphere and spaces for inter-action. The second level will house the reception area, director's office, library-chapel combination, lounge, and 4 counseling rooms.

Project Status: To be completed in 1976.

Cost: \$1,200,000



**Blue Cross/Blue Shield
Regional Headquarters
Denver, Colorado**



Blue Cross/Blue Shield Regional Headquarters Denver, Colorado

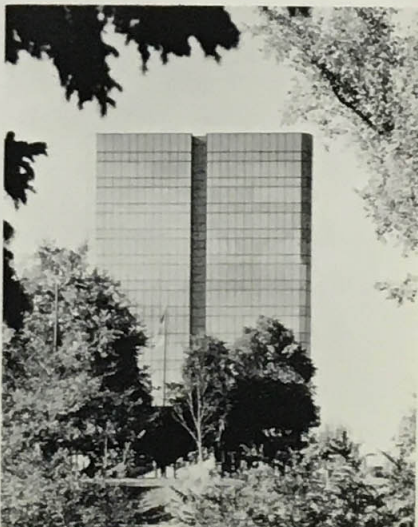
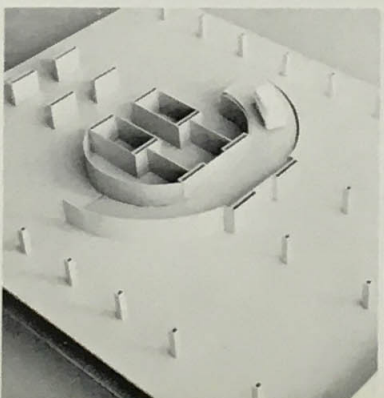
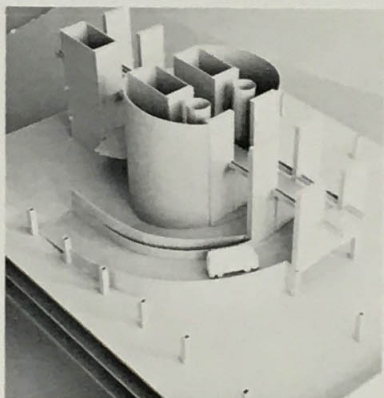
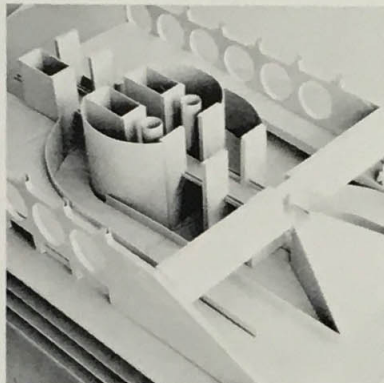
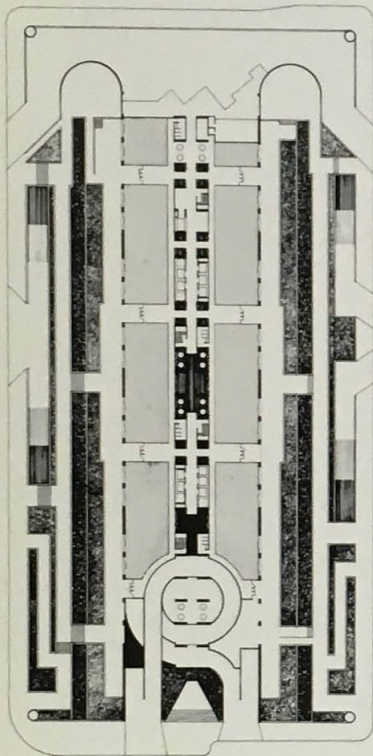
URS was commissioned by Blue Cross/Blue Shield for architectural design of its new regional office headquarters building in Denver, Colorado. Muchow Associates, Denver architectural firm, served as design consultant on the project.

The completed structure now houses 1,400 employees in a 12-story, 470,000-square-foot building, including drive-in underground parking for 1,000 vehicles. Provisions were made so the building can be readily expanded and converted into a multi-tenant complex of 600,000 square feet through addition of a fourth compatible module.

Reflective glass windows contribute to a handsome building and at the same time serve as a means of solar heat. The structure is punctuated by large circular portals that ventilate the circulation area around the main lobbies, as well as add aesthetic interest. Architectural details distinctly emphasize the structural system change from concrete to steel. The building is set back from the street to allow creation of tree-lined plazas and landscape design.

In the building's interior, executive offices are placed off the central corridor, and large open offices line the perimeter, with the outer glass walls lending an atmosphere of spaciousness in these high-density work areas.

Project Status: Completed
Cost: \$22,000,000



**Transportation Test Center
Near Pueblo, Colorado**



Transportation Test Center Near Pueblo, Colorado

Development of a Facilities Master Plan for the Transportation Test Center near Pueblo, Colorado, was authorized by the U.S. Department of Transportation.

Objectives of the Master Plan were to provide

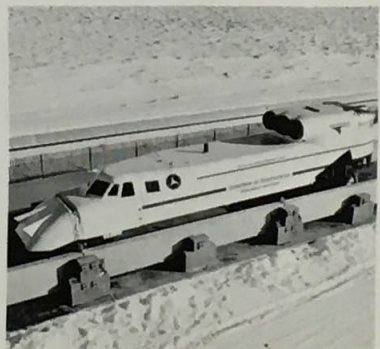
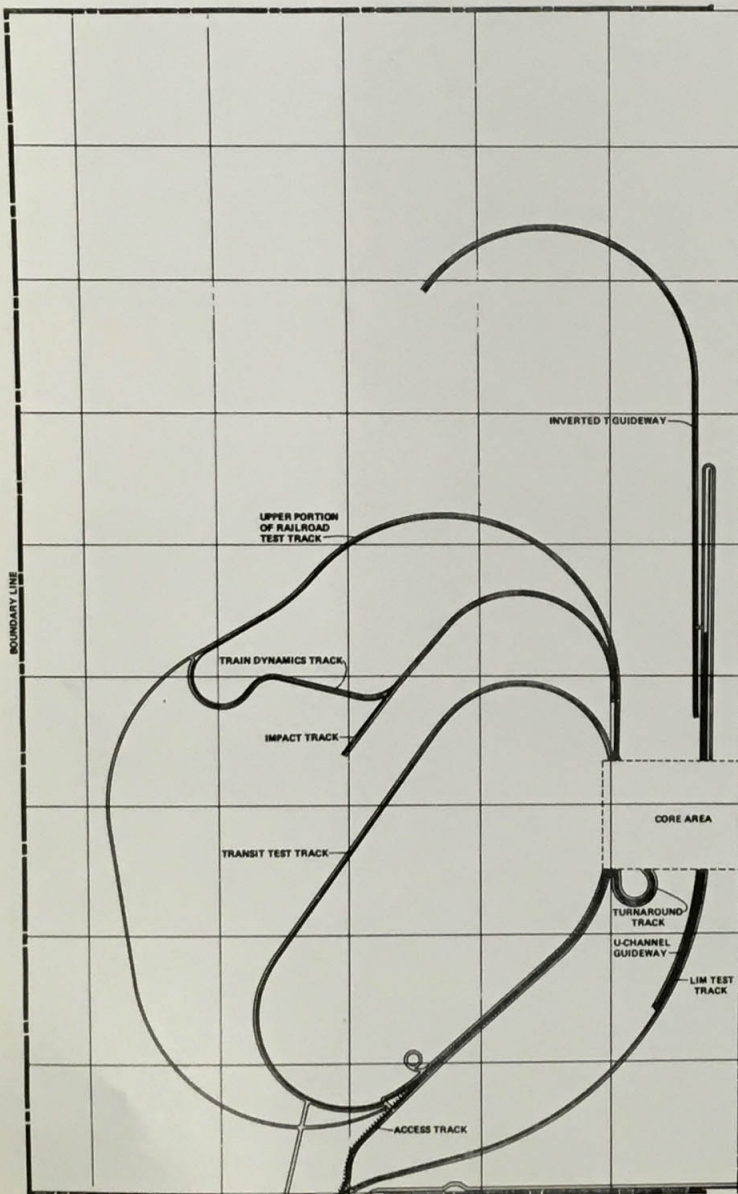
- a comprehensive plan for orderly development of the Center;
- a management tool for programming and budgeting.

The study area encompassed a 50-square mile area for the testing of high speed ground transportation systems including transit and conventional rail test facilities, Personal Rapid Transit (PRT) test guideways, Dual Mode guideways, and guideways for the linear induction motor (LIM) and air cushion vehicles.

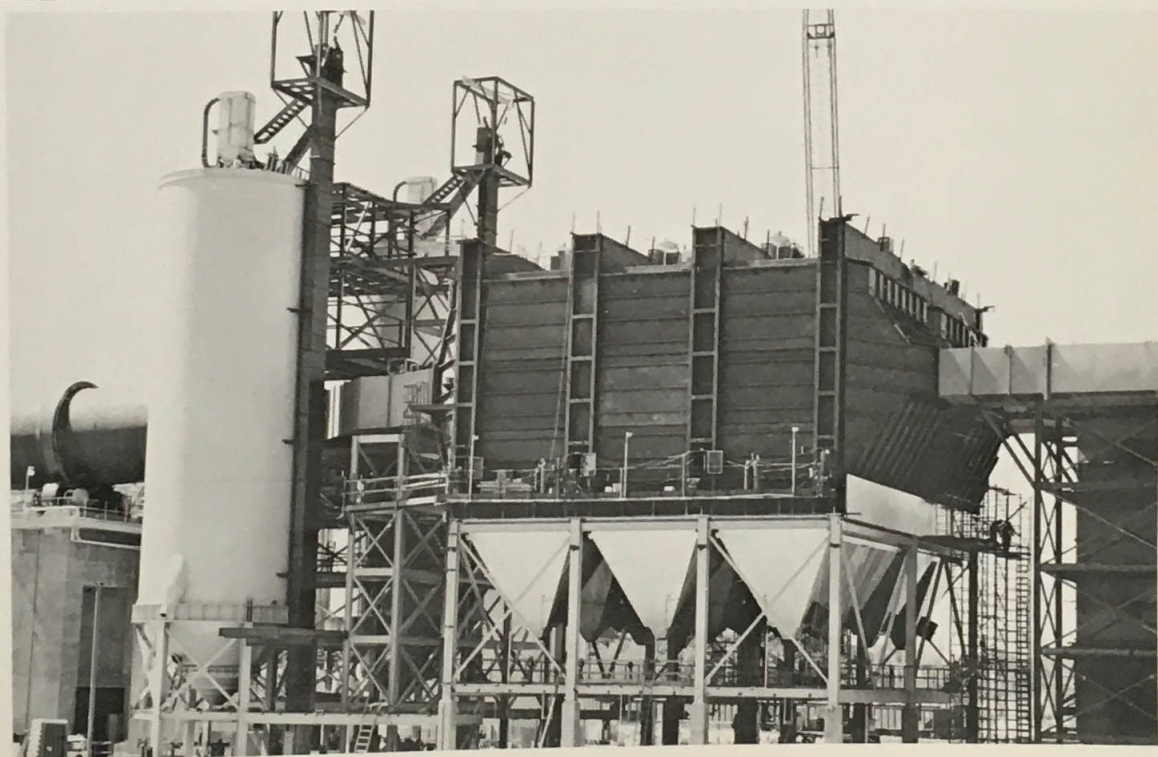
In addition numerous support facilities including storage, maintenance and administrative facilities were planned and located.

Other elements of the master plan included:

- Land use
- Social and community profiles
- Environmental factors
- Operational characteristics
- Internal circulation roadways
- Location of utility corridors
- Fuel storage and power requirements
- Water supply and sewage systems
- Study of security systems



Portland Cement Plant
Portland, Colorado



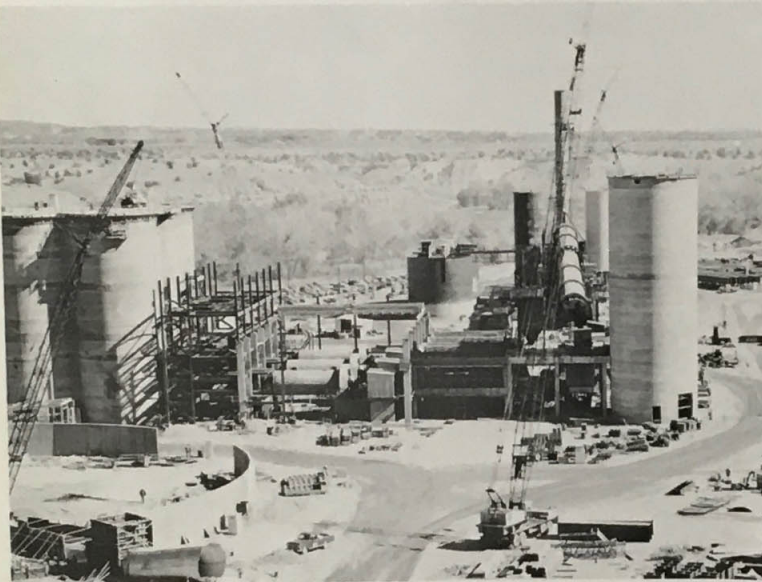
Portland Cement Plant Portland, Colorado

The new plant at Portland, Colorado, designed for Ideal Cement Company, is rated at 470,000 tons per year.

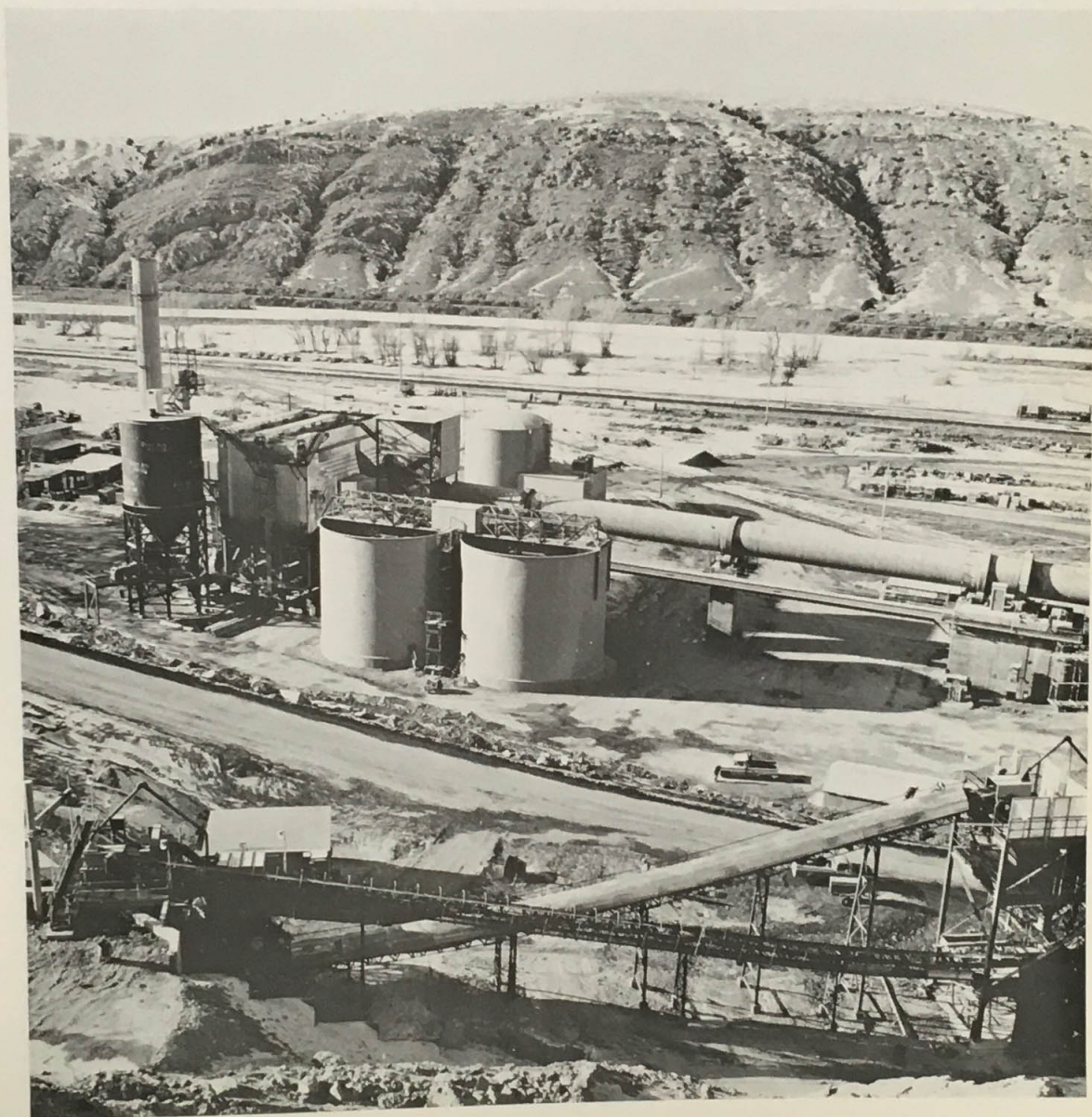
The new facilities include crushing, raw grinding, burning and finish grinding departments. In addition, a new centralized control and laboratory building includes a direct digital process computer and X-ray analyzer.

Major equipment consists of

- 14'x 16'6" x 500' F. L. Smidth rotary kiln
- Wheelabrator precipitator, 450,000 cfm @ 600° F.
- F. L. Smidth Folex Model 814x812 clinker cooler
- Allis Chalmers 11'x 34', 3,000 horsepower raw mill
- Two Allis Chalmers 11'x 34' finish mills rated at 2,000 hp each
- Jeffrey Model 526 Rockbuster single rotor impactor with 1,000-TPH capacity and 600 horsepower
- Jeffrey Model 6WR1Z reversible impactor — 900 HP; 800 TPH capacity



**Portland Cement Plant
Modernization, Trident, Montana**

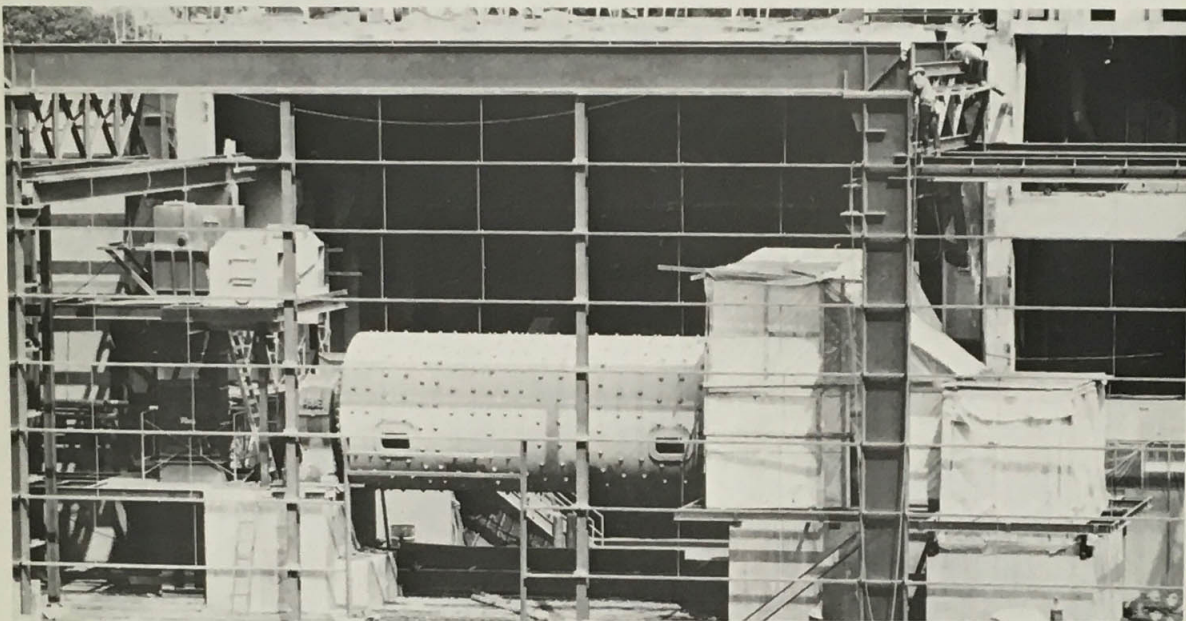


Portland Cement Plant Modernization, Trident, Montana

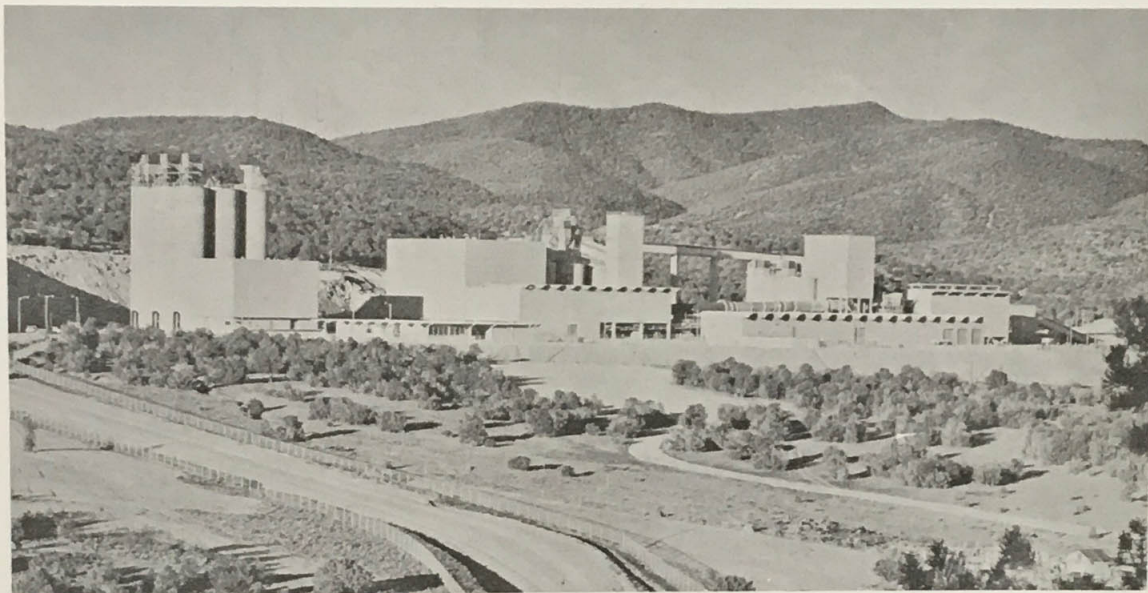
Ideal Cement Company's new facilities at Trident, Montana, are capable of producing 330,000 tons per year of Portland cement.

The engineering design, completed by URS, includes crushing, raw grinding and burning departments.

Control is facilitated by a new centralized control and laboratory building with a direct digital process computer and X-ray analyzer.



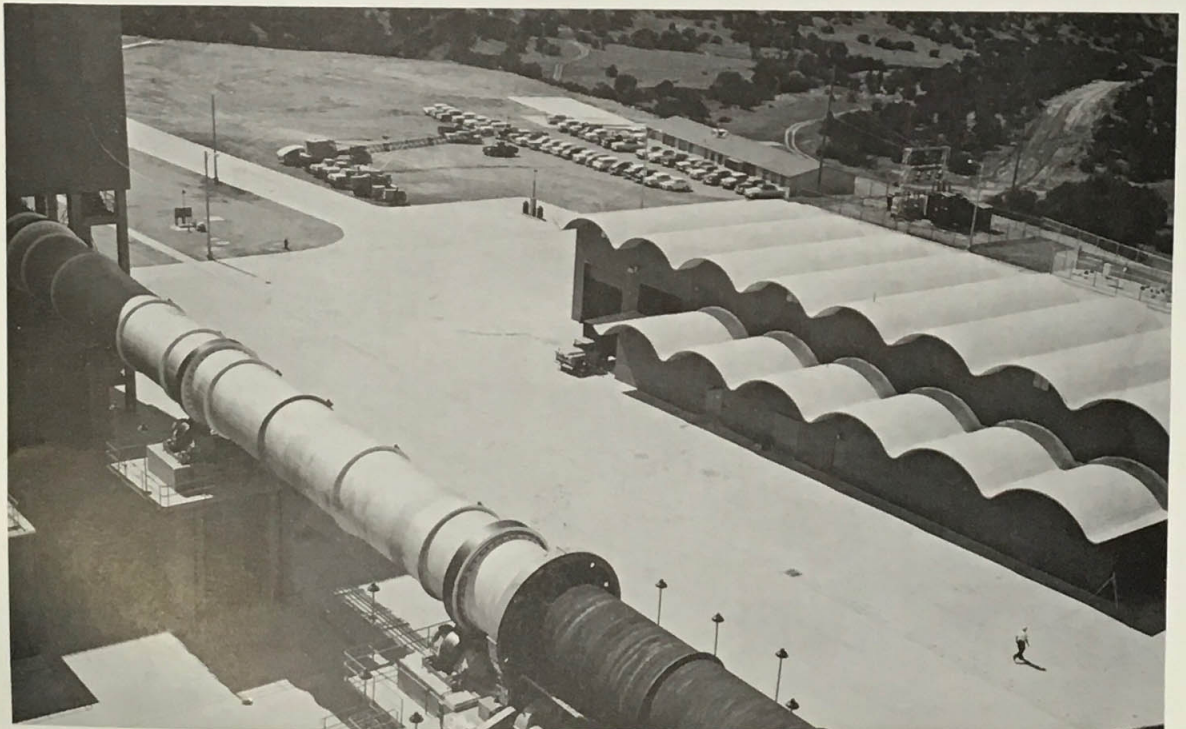
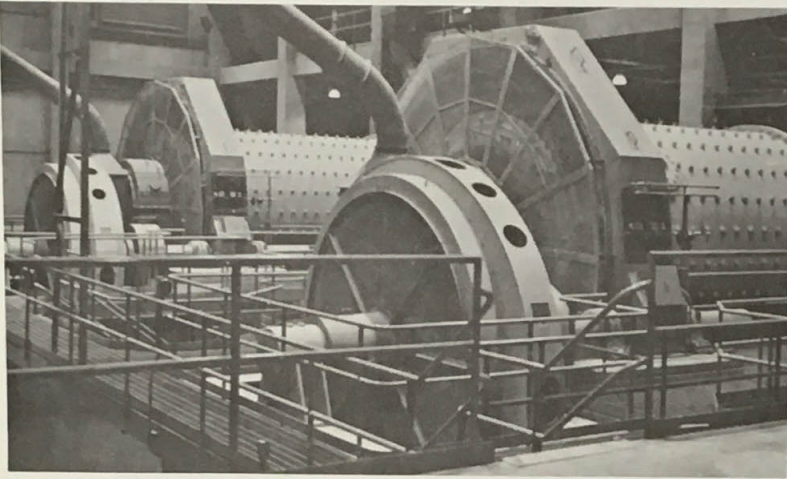
Portland Cement Plant
Tijeras, New Mexico



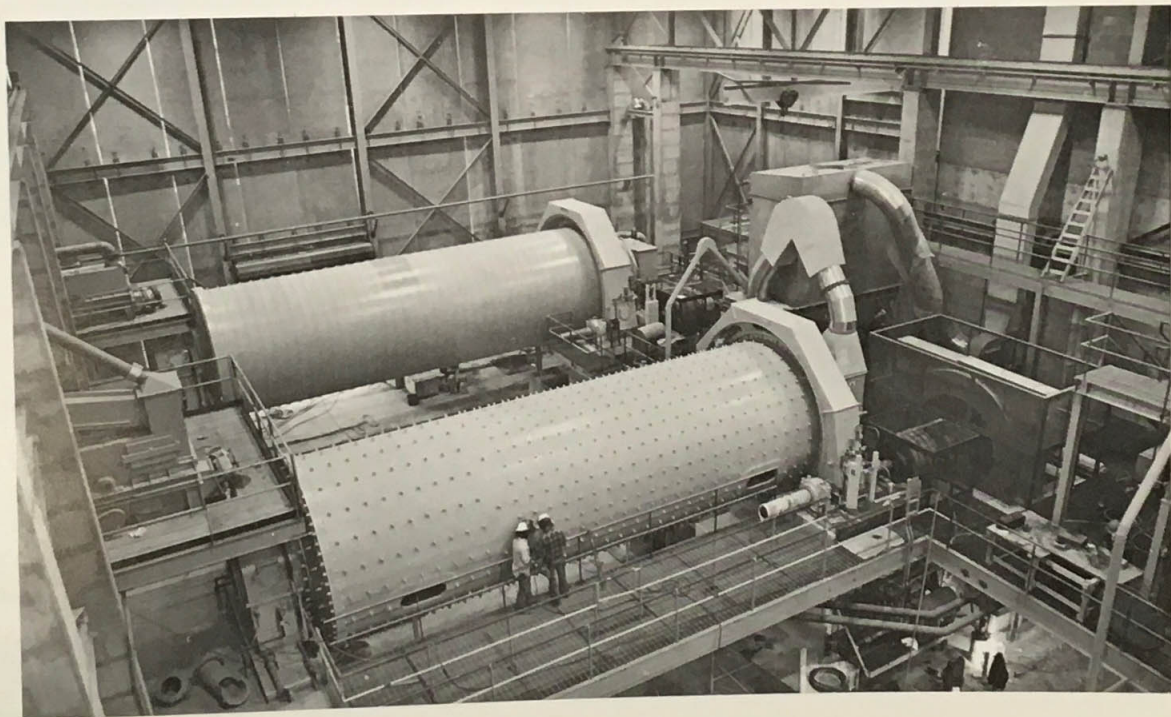
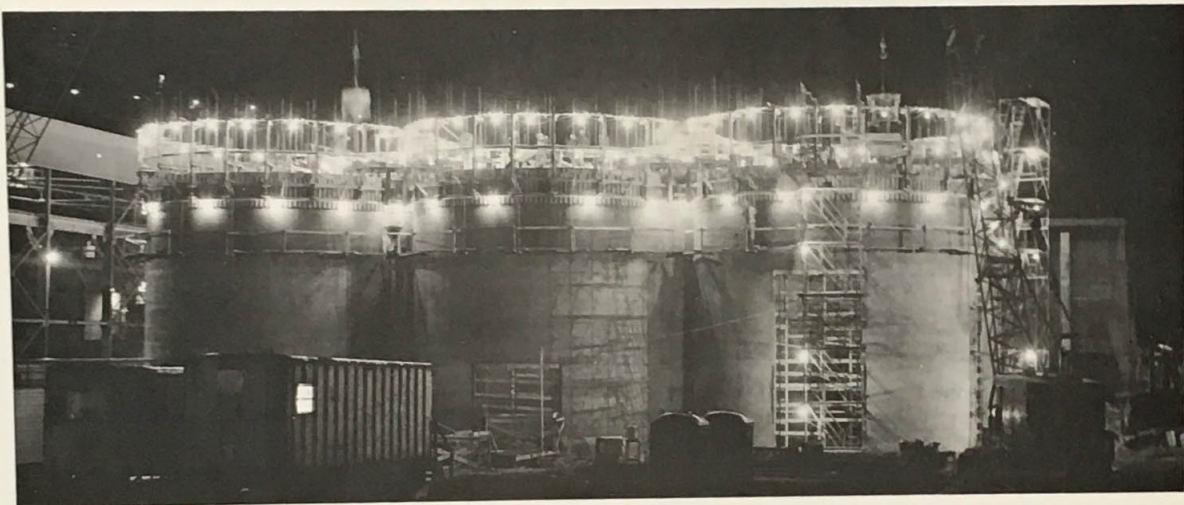
**Portland Cement Plant
Tijeras, New Mexico**

Ideal Cement Company's facilities at Tijeras, New Mexico are rated at 450,000 tons per year.

The facilities designed by URS include crushing, raw grinding, burning, finish grinding, cement storage, packhouse and centralized computer and laboratory control for the plant.



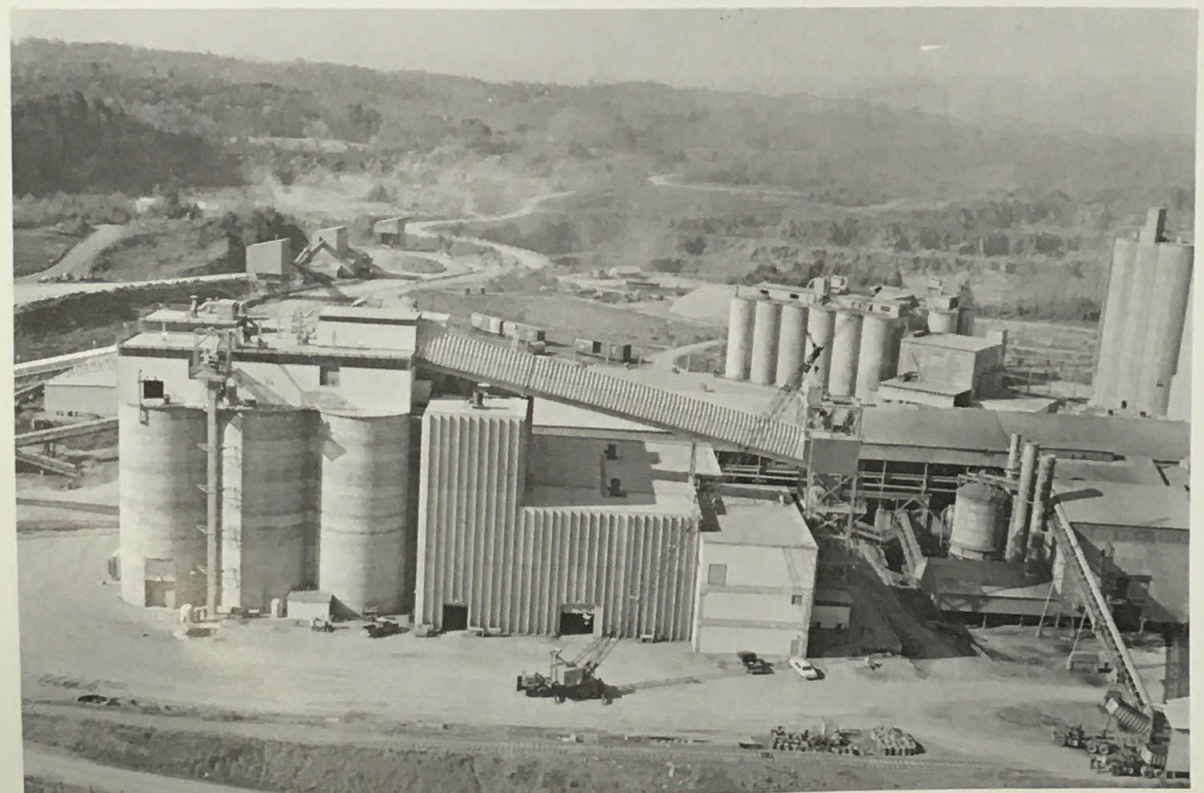
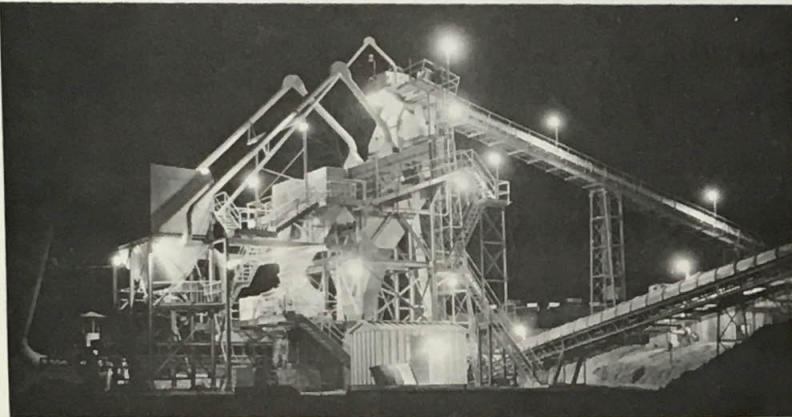
Portland Cement Plant Modernization
Knoxville, Tennessee



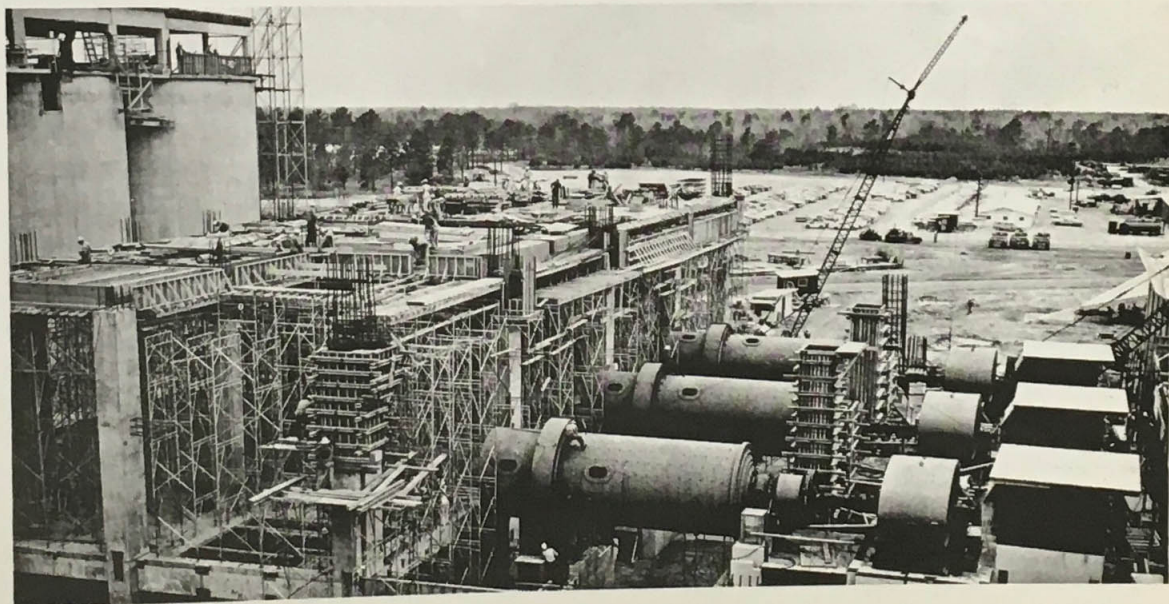
Portland Cement Plant Modernization Knoxville, Tennessee

Ideal Cement Company's new facilities at Knoxville, Tennessee are capable of producing 500,000 tons per year of Portland cement.

The engineering design, completed by URS, includes raw grinding and finish grinding departments, clinker handling and storage, and a laboratory, office and centralized control building.



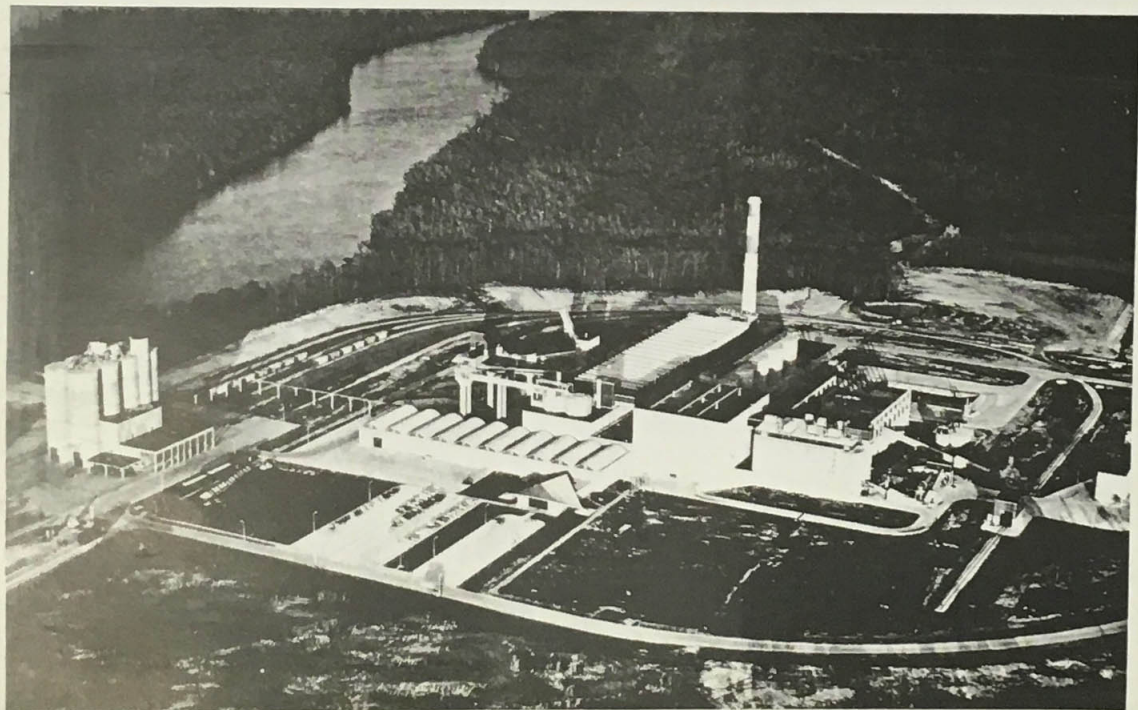
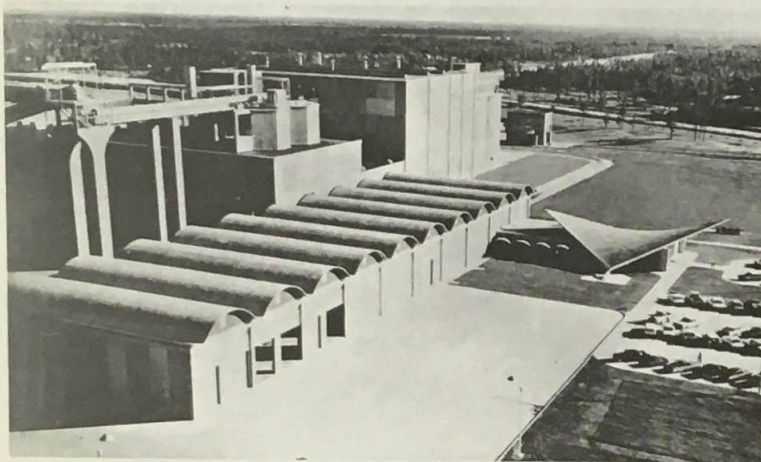
Portland Cement Plant
Castle Hayne, North Carolina



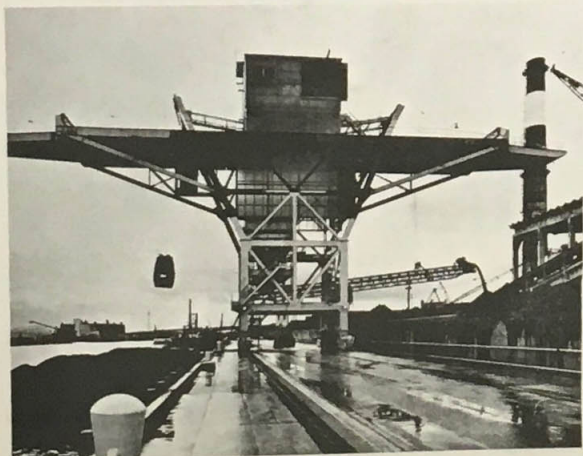
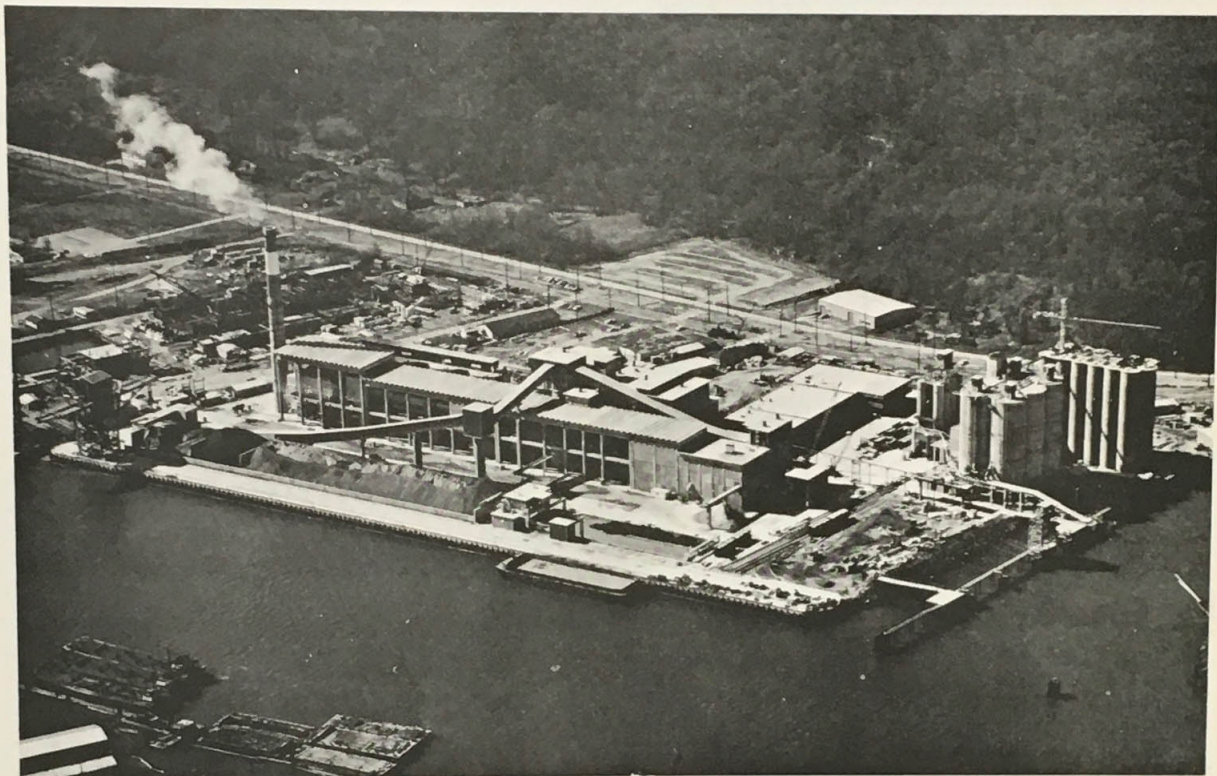
Portland Cement Plant Castle Hayne, North Carolina

Ideal Cement Company's facilities at Castle Hayne, North Carolina are rated at 1,000,000 tons per year.

The facilities designed by URS include crushing, raw grinding, burning, finish grinding, cement storage silos, pack-house, and cement bulk loading for trucks, railroad and barges. In addition, a centralized control and laboratory building includes a direct digital process computer and X-Ray analyzer.



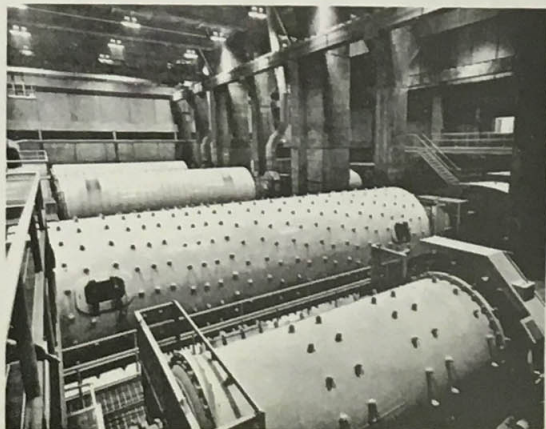
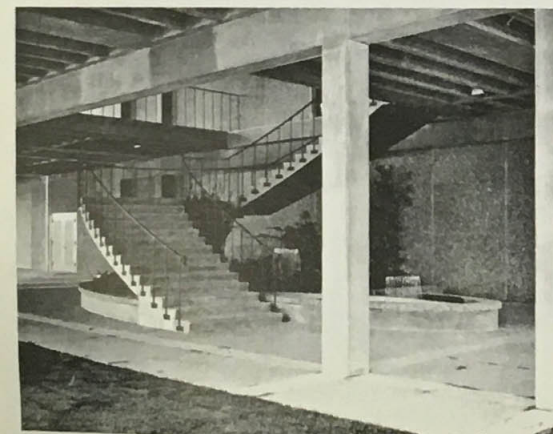
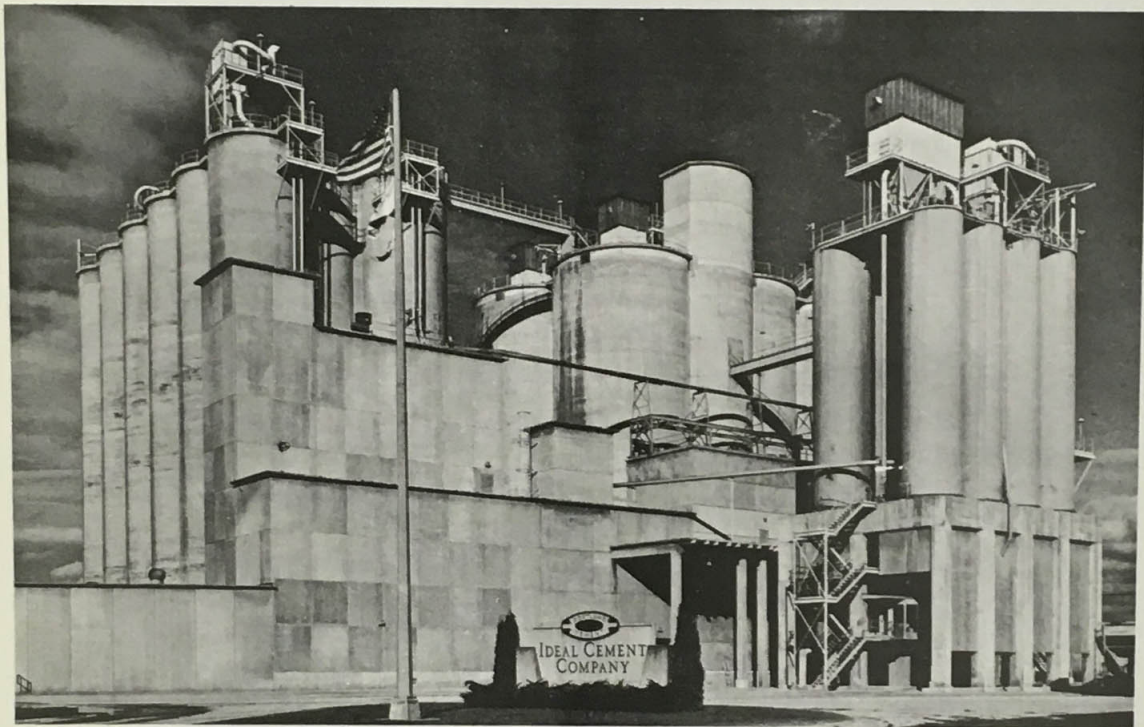
Portland Cement Plant
Seattle, Washington



Portland Cement Plant Seattle, Washington

Ideal Cement Company's facilities at Seattle, Washington are rated at 500,000 tons per year.

The facilities designed by URS include barge unloading and storage for raw materials, raw grinding, burning, finish grinding, cement storage, packhouse, and cement bulk loading for trucks, railroad, barges and ships. A centralized computer and laboratory provide control for the operations.



ENERGY CONSERVATION & ANALYSIS

URS is able to provide complete energy management services, ranging from field surveys, data generation and analysis, to the proposing of final recommendations, preparation of economic studies, and redesign.

Most owners are aware of the large amounts of energy consumed by their facilities, and the increasing costs for this energy usage. To determine energy reduction alternatives, URS first conducts an inventory and field survey of the buildings, including all architectural, mechanical, and electrical components. Energy is categorized by major users (i.e., space heating, lighting, air conditioning, etc.) and is traced as it flows into, within, and out of the facilities involved. Individual users are ranked in comparison to the total energy usage, both in terms of specific rates of energy use and dollar energy costs. The data generated determines the amount of energy being used by each system or process, and how energy consumption might be reduced.

Information derived from this analysis serves as the basis for recommendations as to any remedial or corrective action which might be introduced. Options are proposed which require little or no capital expenditure, plus those alternatives which require a greater investment.

These recommendations are then analyzed for potential cost savings or return on investment. Finally, URS prepares a complete construction document package in order to implement those energy upgrade projects which the owner selects as being the most beneficial to his interests.

ENERGY CONSERVATION STUDIES

WHITE SPOT RESTAURANT CHAIN

Energy management studies were conducted at various White Spot Restaurants in Denver to develop recommendations for energy conservation. The study included an energy conservation audit, which provided a basis for comparison, forecasting, and recommendations. A complete evaluation of all aspects of the buildings was made, providing data for formulating conservation measures. This evaluation included architectural design, mechanical and electrical design, and evaluation of a fire sprinkler system to reduce insurance rates. Recommendations were made based on adjustments, minor modifications, and usage changes. Recommendations based on retrofit measures were later made, which will require an initial investment to implement. The items were evaluated on a life-cycle cost basis with items of most favorable return on investment listed first (based on escalated and present money costs).

The final report contained a complete summary of findings for recommendations which were arrived at as a result of the study. A critique was presented on the cost effectiveness of the study procedure for its intended use as a means of determining energy effectiveness of the building, and development of conservation measures.

GATES RUBBER COMPANY ENERGY ANALYSIS & RENOVATION

An initial study was conducted to analyze several HVAC systems to determine the most energy effective system to use in the building. Several alternatives that would increase efficient use of energy were considered. Among the alternatives were solar heating, reduction of fenestration areas, retrofit of the existing refrigeration plant to a central heat pump system, and various heat recovery applications. Each of these alternatives were evaluated on a life cycle basis to determine their return on investment. Finally, a detailed cost estimate was made of all new proposed construction for the purpose of establishing a construction budget. URS is currently in the process of designing the new construction including the accepted alternatives.

VETERANS ADMINISTRATION HOSPITAL ENERGY ANALYSIS - 12 BUILDINGS (443,000 sq.ft.)

An analysis of the existing HVAC systems, including the central boiler plant and chilled water plants, is being conducted to identify all possible energy conservation opportunities. Each of these E.C.O.'s are being evaluated on a life cycle basis and paybacks are being calculated to determine their economic feasibility. The studies include:

1. Determination of system capability to provide minimum required environmental conditions at minimum cost.

VETERANS ADMINISTRATION HOSPITAL ENERGY ANALYSIS - 12 BUILDINGS (443,000sq.ft.)

2. Validate the operation of the equipment with the intent of the design.
3. Identify operational problem areas.
4. Evaluate operation and use of existing engineering graphic control.
5. Prepare written operating procedures when necessary to assure maximum conservation of energy.

IV. PERSONNEL

ORGANIZATION CHART

Gernot D. Appelt
Principal-in-Charge

Arthur Swords
Project Manager

Dorian Jansen
Structural

Glenn Benham
Electrical

Roger Martin
Mechanical

Clair Iverson
Industrial

Helmuth Mueller
Architectural

EDUCATION

- College of Engineering, Berlin, Germany, Degree in Structural Engineering, 1945

REGISTRATION

- Professional Engineer - Colorado, California, Texas
- Licensed fallout shelter analyst

PROFESSIONAL EXPERIENCE

- Assistant Director of Operations and Manager, Structural Department, URS Company, Denver, Colorado.
- Responsible for coordinating departmental and project design teams.
- Provide client liaison and contract administration. Development of project scope of work, design criteria, estimates, specifications and detail requirements.
- Design of schools, hospitals, hotels, office and other commercial buildings requiring reinforced and prestressed concrete, structural steel, reinforced masonry, and timber.
- Design of cement, meat packing, brick and other industrial plants requiring reinforced and prestressed concrete and structural steel.
- Design of concrete silos and steel bins.
- Design of roadway, highway and railroad bridges with reinforced and prestressed concrete superstructures. Design of substructures, including piers prestressed to bedrock.
- Design of roads and freeways including interchanges. Traffic and layout studies.
- Construction supervision of airport installations, office and other commercial buildings.
- Investigation of distressed silos and other structures including recommendations and repair design. Structural analyses.

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers
- American Concrete Institute

SELECTED PROJECTS

Structural Project Engineer for the following:

- Complete structural design for the Campbell County Hospital in Gillette, Wyoming. The hospital and clinic have a combined area of approximately 130,000 square feet. The building structure consists of reinforced concrete flat slab and concrete walls around stairs and elevators.
- Office building for Blue Cross/Blue Shield in Denver.
- Several schools in Calgary, Canada, and all design reviews for the Denver Public Schools.
- Ski resort complex for LTV in Steamboat Springs, consisting of hotel, commercial plaza and gondola terminals.
- Several cement plants or portions thereof for Ideal Cement Co., Martin Marietta Cement Co., Southwest Cement Co., Monolith Cement Co., Calaveras Cement Co., Keystone Cement Co., Phoenix Cement Co., and Atlantic Cement Co., located in: Portland, Colorado; Seattle, Washington; Trident, Montana; Knoxville, Tennessee; Monolith, California; Redding, California; San Andreas, California; Lyons, Colorado; Bath, Pennsylvania; Clarksdale, Arizona; El Paso, Texas; Albany, New York. These projects consisted of kiln supports, mill buildings, crushing plants, packhouses, silos, loading and unloading facilities, etc.
- Boiler house addition to Minn-Dak Farmers Coop Sugar Factory in Wahpeton, North Dakota.
- Meat packing plants and additions for Burns and Co., Sigman Meat Co., and Monfort Meat Co., located in Greeley, Colorado, Brush, Colorado, and several in Canada.
- Brick Plant for Denver Brick and Pipe Co. in Denver, consisting of manufacturing building and silos.
- Several bridges in Canada.
- Investigation of distressed silos and buildings.

EDUCATION

- B.A., Architecture, University of Colorado, 1974
Construction Advancement Program, A.G.C.
Certificate of Advanced Estimating, A.G.C.

PROFESSIONAL REGISTRATION

- Registered Architect, Colorado
- NCARB Certificate - Application in Process

PROFESSIONAL EXPERIENCE

- Project Architect, URS Company, Denver, Colorado
- Former Project Architect, Loup-Miller Companies, Denver, Colorado
Involved in design of several shopping centers, apartment buildings, a product distribution center, golf and tennis clubhouse, and restaurant. Responsibilities included programming, design, cost control and production. Extensive client relations and supervision of other architects involved.
- Former Project Architect, Charles S. Sink & Associates, Denver, Colorado
Architect-in-Charge of design, production and supervision of the laboratory facility at the Auraria Higher Education Center. Project Cost: \$4.5 million. Worked with client in determining program, developed schematic design; prepared construction documents and supervised construction.
- Former Project Architect, William Muchow & Associates Denver, Colorado
Developed Master Plan for Auraria Higher Education Center. Total Project Cost: \$40 million. Organized program plan for entire campus. Designed first two campus buildings for Community College of Denver. Supervised construction documents and on-site construction until completion of project.
- Former Project Architect, Stearns-Roger Corporation, Denver, Colorado
Developed programming, design and construction drawings for Glendale Municipal Center.

EDUCATION

- University of Utah, B.S., Civil Engineering, 1949

REGISTRATION

- Professional Engineer, Colorado

PROFESSIONAL EXPERIENCE

- Supervised design and preparation of plans and specifications for industrial plants, commercial buildings and schools. Projects have included sugar plants; cement plants in Colorado and Montana; raw material handling systems for a chemical plant; an electrical cable plant in Arizona; meat processing plant in Georgia and several school buildings.
- Designed structures such as cement storage silos, cement mill buildings, packhouses, conveyor galleries, meat packing plant buildings.
- Wrote structural specifications and prepared cost estimates for the above structures.
- Inspected storage silos (coal and grain) which were showing signs of distress. Investigated causes and wrote reports of findings and recommendations for repair.
- Designed special equipment for Rocky Flats Cleaning and Plating Facility (Q Clearance).
- Formerly in Coal Mine Fires Branch, U.S. Bureau of Mines. Conducted surveys to establish location of fire and prepared plans and procedures and cost estimates for controlling or extinguishing the fire. As field engineer directed the contractor, made quarterly surveys as a basis for payment and wrote reports.
- Project Planner for irrigation projects in the Upper Colorado River Basin for the U.S. Bureau of Reclamation. Prepared preliminary engineering designs and cost estimates for dam and canal projects. Conducted canal location surveys.
- Designed and checked design of interstate highway bridges in the states of Colorado and Washington. Made studies of alternate type bridges, including preliminary designs and cost estimates.

- Designed interchanges for interstate highway in the state of Washington.
- Designed and prepared plans for city street widening and improvement program in Phoenix, Arizona.

PROFESSIONAL AFFILIATIONS

- National Society of Professional Engineers

EDUCATION

- University of Minnesota Institute of Technology, Bachelor of Aeronautics and Engineering Mechanics, 1974

REGISTRATION

- Professional Engineer, Colorado; Wyoming (pending)

PROFESSIONAL EXPERIENCE

- URS Company/Denver, Chief Engineer, Mechanical Department. Supervise all functions within the Department including client contact, preliminary design and working drawing production of heating, ventilating, air conditioning, plumbing and fire protection systems and construction supervision. Project types include hospitals, office buildings, stores, schools, factories, residences and restaurants.
- As Engineer of Projects with McFall and Konkel Consulting Engineers, was responsible for client contact and scheduling of mechanical design projects, production of preliminary or concept drawings on plumbing, HVAC and fire protection systems, calculation of domestic hot and cold water requirements, sewage disposal requirements and HVAC loads; writing of contract specifications; coordination with electrical, structural and other consultants; and supervision of bid preparations and construction.
- While with Martin Marietta Corporation, was involved in work including: heat transfer calculations on spacecraft components; development of spacecraft temperature control systems; testing of spacecraft thermal control systems; and interface meetings with clients for periodic coordination of thermal control system development.

PROFESSIONAL AFFILIATIONS

- American Society of Heating, Refrigeration and Air Conditioning Engineers

SELECTED PROJECTS

- Addition for B.K. Sweeney Manufacturing Plant, Denver, Colorado.
- Addition to Mountain Bell main switching building, Rock Springs, Wyoming.
- Maintenance Garage and Office for Mountain Bell, Cheyenne, Wyoming.
- J.C. Penney Store, Kansas City, Missouri.
- Boiler conversions gas to oil, Ft. Carson, Colorado Springs, Colorado.
- Warehouse and Commissary Addition, Lowry AFB, Denver, Colorado.
- Buckley Fuel Tank Operations and Pump House Building, Buckley Air National Guard Base, Aurora, Colorado.
- Addition to Aerospace Data Center, Buckley Air National Guard Base, Aurora, Colorado.
- Complete mechanical remodeling of the Ute Mountain Tribe Recreational Building.
- Addition to First Presbyterian Church, Boulder, Colorado.
- North East Bowl Restaurant, Vail, Colorado.
- Le Jardin' Restaurant, Denver Technological Center, Denver, Colorado.
- Public Employees Retirement Association Building, Denver, Colorado.
- Mayflower Restaurant, Cheyenne, Wyoming.
- Goodwill Industries Building, Cheyenne, Wyoming.
- RTD Bus Temporary Facility, Boulder, Colorado.
- Medical Clinic, Cheyenne, Wyoming.
- Locker Room and Shower Room Addition, Bureau of Indian Affairs, Wahpeton, North Dakota.
- Moore Realty Office Building, Aurora, Colorado.
- S. Arthur Henry Jr. High School, Denver, Colorado.
- Three Elementary School Additions, Brighton, Colorado.
- George Washington Elementary School Addition, Colorado Springs, Colorado.
- Wunderlich Residence, Colorado Springs, Colorado.

EDUCATION

- Pennsylvania State University, B.S., Electrical Engineering, 1959
- Rutgers University, M.B.A., Business Management, 1972

PROFESSIONAL EXPERIENCE

- Manager-Electrical Engineering Department, URS Company, Denver, Colorado
Responsibilities include the coordination of electrical engineering for industrial and commercial projects. Management of client liaison, develop project scope of work, design criteria, estimates, specifications, and detail requirements.
- Former Senior Electrical Engineer, Behrent Engineering Company, Denver, Colorado
Engineer, design, and layout of electrical power, distribution, control, and lighting facilities for large electric-melter, computer controlled fiberglass manufacturing plant. Duties included liaison with clients to establish design parameters, writing equipment specifications, design coordination with other disciplines, supervision of working drawings preparation, field checkout, and start-up of installation.
- Former Senior Maintenance Planner, Esso Standard Libya, Inc. Tripoli, Libya
Making of daily, weekly, monthly, and yearly maintenance schedules concerning jobs, personnel, equipment, and materials. Planning for all phases of major maintenance overhauls of large equipment, including refinery unit, fresh water distillation plant, boiler/turbine/generator unit, Single Point Mooring facility for tanker loading, and large sea-going crane unit. Preparation of maintenance budget, maintenance contracts, and estimates were among administrative duties. Special duties included: Maintenance Representative on Fresh Water Control Committee; Substitute Planner for gas liquifaction plant.
- Former Senior Electrical Engineer, Lago Oil & Transport Company, Ltd. (Exxon Affiliate), San Nicolas, Aruba, Netherlands Antilles
Determined the weak points of the refinery 13.8kV, 2.3kV, and 480 volt distribution systems. Planned, engineered, designed, specified, and installed entire new secondary 13.8kV to 480 volt distribution system including the elevated substation buildings. Solved electrical start-up and design problems for major hyrdo-desulfurization plant addition. Wrote operations and maintenance manual for the sulfur handling equipment. Special duties: Lago member of the Exxon Electrical Committee on Technical Matters.

PROFESSIONAL EXPERIENCE (con't)

- Former Maintenance Engineer - Utilities, American Cyanamid Company, Bound Brook, New Jersey
Manpower planning, scheduling, and materials requisitioning for major overhauls as well as routine maintenance for compressed air system, fresh and river water distribution, boiler feed water treatment system, steam (3 boilers) and electrical generation (3 turbo-generators), steam distribution, electrical distribution, effluent gathering and treatment, making of ice, and all air conditioning equipment. Responsible for construction inspection and acceptance of electrical and instrument controls for complete conversion from coal to full automatic gas/oil operation of the three large industrial boilers. Designed and conducted classes for operators and supervisors concerning new boiler control boards and electrical distribution system. In charge of clean-up, redesign, and rewire of power house electrical distribution switchgear and primary substation system following disastrous river flooding of entire plant.

Former Electrical Engineer, American Cyanamid Company
Engineer, design, and layout primary and secondary single and three-phase electrical systems for lighting, operation, and control of buildings, machinery, and flow systems for both old and new units within the chemical plant. Designed a new central primary electrical distribution control board for the plant. Company coordinator with consulting engineering firm on design and installation of the new primary distribution system. Advised and assisted Utilities Section on primary distribution system cable limits, protective relaying coordination and testing, and generator care and operations.

Former Maintenance and Construction Supervisor, American Cyanamid Co.
Civil, mechanical, and electrical installation of new vessels, tanks, and pumps for chemical plant use according to Engineering Specifications and Drawings by scheduling job, supervising job, planning required manpower by crafts, and planning for the availability of materials.

- Former Management Trainee, Youngstown Sheet & Tube Company, Campbell, Ohio
Learned methods of steel mill operation and capabilities of equipment from cranes to rolling mills. Assigned to gas-fuel engineering and furnace maintenance.
- Former Foreman, G-B General Contracting, Monroe County, Florida
Supervised and assisted in the building of homes and other structures of poured concrete construction. Obtained Electrical Contractor's License and worked on electrical construction.

EDUCATION

- University of Colorado, B.S., Mechanical Engineering, 1948
- University of Chicago, Certificate of Meteorology, 1944

REGISTRATION

- Professional Engineer - Colorado, Kansas, Ohio, Tennessee, North Dakota, Michigan, Minnesota

PROFESSIONAL EXPERIENCE

- As Chief Engineer for Great Western Sugar Company, directed the design and construction of numerous projects, including: complete new beet sugar factory with steam boiler plant, lime plant, air and water pollution abatement system; coal, limestone, and coke unloading, conveying, and storage systems; natural gas, residual oil, and coal firing systems for boilers, dryers, and kilns; fuel oil storage and handling systems; power generation and distribution using steam turbine-generators; air pollution abatement systems utilizing wet scrubbers, mechanical, and baghouse type collectors; water pollution abatement systems; beet sugar, pulp, and molasses storage and handling systems; sugar and pulp packaging systems; and replacement and modernization of sugar production facilities.
- Represented Great Western Sugar Company in all environmental matters from 1966 through 1973 in six states and at the Federal level.
- Represented domestic sugar beet industry in negotiations with Federal Environmental Protection Agency in establishing effluent guidelines.
- Manager of Engineering, Dravo Corporation, 1973-1974, for new Denver operations office.
- Vice President, Plant & Process Engineering, URS Company, 1974 to date. Typical projects include:
 - New lignite fired boiler plant - 350,000#/hr steam with 2 units;
 - Air Pollution abatement system for lightweight aggregate plant, including incineration and heat recuperation;
 - Jet Fuel terminal for air field;
 - Pumping stations for municipal water supply;
 - Preliminary design of new beet sugar factory;
 - Heat balance studies for beet sugar factories;
 - Air Pollution abatement system for 2 coal fired public utility boilers.

PROFESSIONAL AFFILIATIONS

- American Society of Mechanical Engineers
- American Society of Sugar Beet Technologists
- Air Pollution Control Association
- Consulting Engineers Council of Colorado
- Member of Colo. Air Pollution Variance Board - 10 years; Chairman - 6 years.

EDUCATION

- University of Washington, Seattle, Washington, B.A. Architecture, 1955

REGISTRATION

- Registered Architect, Colorado

PROFESSIONAL EXPERIENCE

- Manager of URS Company Architectural Department
- Project Manager, Denver Public School Facilities.
- Project Architect, Minnesota Valley Coop Sugar Factory - process structures and office building; Aerospace Data Facility Bldg. 401 Addition at Buckley Air National Guard Base, Denver.
- Architectural practice of Mueller-Architects from 1963 to 1976.
- Architectural practice has provided extremely wide ranging involvements in preparing analyses of clients' needs in a great number of fields, such as corporate offices organization, educational facilities, technical vocational, retail stores, shopping center masterplanning and execution of component design, housing and churches, communications facilities.
- Worked for two years with Naramore Bain Brady and Johansen, Architects, as designer and draftsman, Seattle, Washington.
- Design and construction coordination of 17 story apartment tower with Jakob Zweifel, Zuerich Architect, Switzerland.

PROFESSIONAL AND CIVIC ACTIVITIES

- Environment 76. Comprehensive design and feasibility study of Denver Westside. Committee award.
- Active in AIA Committee Work, 1972.
- Participant in community affairs, such as Jeffco Open Space Concept and mountain environmental issues.
- Initial concept study group chairman technical vocational education for Jefferson County R1 School District.

SELECTED PROJECTS:

Principal Architect:

- Low Income Housing Project, Denver Housing Authority, Denver Colorado - 25 cluster unit, multi-family housing development
- U.S. Department of Health, Education & Welfare, Denver, Colorado
Rehabilitation and remodel of Region VII Indian Hospitals and related health care facilities
- U.S. Department of Fish & Wildlife, Denver, Colorado
Development of prototype visitor's center and solar feasibility study for Region VII area refuge spaces
- Denver Public School Remodel Program, 1974-ongoing
Over 80 projects completed under Basic Services Agreement
- Reorganization and addition to Conifer Elementary School, Conifer, Colorado
- Masterplan and Execution Phase I and Phase II Design, Conifer Village Shopping and Office Center, Conifer, Colorado
- All-City Athletic Facility, Denver, Colorado at South High School
- Reorganization and renovation of Colorado Division of Highways Office - preliminary design, pending funding
- Space organization and functional analysis for corporate offices - Chevron Oil Company, Safeco Insurance Company, Shell Oil Company, and Columbine Building offices, Denver, Colorado
- Office building and computer center for U.S. Air Force at Buckley Air Field, Aurora, Colorado
- White Mesa Recreation Center, White Mesa, Utah, for the Ute Mt. Ute Indian Tribe, Towaoc, Colorado
- Tribal Office Building, Towaoc, Colorado for the Ute Mt. Ute Indian Tribe, Colorado
- EES Automatic Electronic Dialing Buildings, for Mt. Bell Telephone Corporation, Breckenridge, Colorado
- Driving Range Control Building for Jefferson County R-1 School District
- Observatory and lecture structure, outdoor laboratory, for Jefferson County R-1 School District

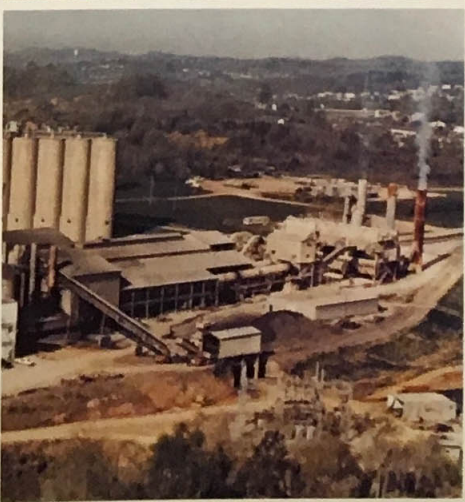
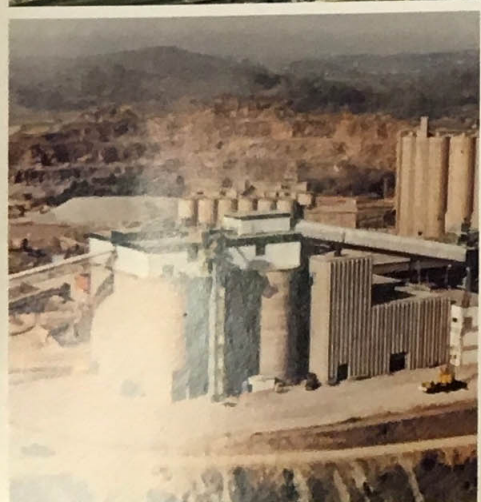
SELECTED PROJECTS

- 2 ESS Automatic Electronic Dialing Buildings, Mountain Bell Telephone, Breckenridge, Colorado.
- Numerous Semi-Automated Dial Buildings located throughout Colorado for Mountain Bell.
- Automotive Repair Training Facilities for 3 high schools, Jefferson County R1 School District.
- Driving Range Control Building, Jefferson County R1 School District.
- Metalworking - Electronics - Drafting - Audio Visual Education complexes, Wheat Ridge, Manning, Oberron, Lakewood, Evergreen High Schools, Jefferson County R1 School District.
- Complete reorganization addition of Conifer Elementary School.
- Observatory and lecture structure, outdoor laboratory, Jefferson County R1 School District.
- Masterplan and execution Phase I and Phase II design, Conifer Village Shopping and Offices Center, Conifer, Colorado.
- Mountain apartments and condominiums, Conifer Village Masterplan.
- Project Architect, Appleton Sugar Plant and Support Facilities, including process and traffic coordination.
- Space organization and functional analysis for corporate offices - Chevron Oil Co., Safeco Insurance Co., Shell Oil Co., and offices in Columbine Building. Reorganization and renovation of Colorado Division of Highways executive offices.
- Office Building Computer Center for the U. S. Air Force at Buckley Air Field, Aurora, Colorado.

V. URS BROCHURES AND ANNUAL REPORTS

URS

An Overview



URS Corporation

Front Cover Photos

Top left: Denver Fire Headquarters, Denver, Colorado. Middle left: Yankee Stadium Modernization, New York City. Middle Center: Blue Cross/Blue Shield Regional Headquarters, Denver, Colorado. Middle right: California State Capitol Restoration, Sacramento, California. Bottom left: Portland Cement Plant Modernization, Knoxville, Tennessee.

Founded in 1951, URS Corporation has been dedicated to improving the quality of man's environment and providing the multidisciplinary capabilities required to accomplish that objective.

URS has brought together within a single professional services organization distinguished and experienced engineering, research, architectural, planning, training and construction management capabilities. With all of the important professional disciplines represented, URS is able to provide a dynamic approach to handling large and complex problems and projects.

Today URS is one of the largest international investor-owned professional services organizations with a staff of over 1,000. Through the development of its national and international delivery system, URS is in a position to offer the full range of skills required to spearhead a project

from inception through the final construction stages. With principal offices in every major geographical region of the United States and its expanding network of offices overseas, URS can provide ready access to a pool of experienced professionals wherever clients may require.

Energy

The Diablo Canyon Nuclear Power Plant is an example representative of URS' energy program, ranging from siting considerations to seismic analysis and structural engineering.

URS' energy experience includes involvement with over 50 nuclear and over 20 fossil fuel power generating facilities as well as several hydroelectric installations.

Comprehensive consulting services to aid energy producers in establishing new facilities, or retrofitting existing operations include...

- socioeconomic and environmental impacts
- geology and seismicity
- hydrology and meteorology
- soil mechanics
- general geotechnical considerations

In addition, URS provides planning and management services, schedule and cost control, training, and evaluation of benefit/costs for alternatives during program development.

URS also provides specialized services to assist government agencies in developing criteria which are both reasonable and useful in judging applications for construction permits and which assure compliance with applicable laws and regulations. Similar specialized services are of practical value to clients by clearly defining requirements and alternatives at the outset, thus serving to minimize the time required for permit review and licensing.

Representative Projects

Seismic Analysis at Indian Point Nuclear Power Plant—Consolidated Edison Company of New York, Inc.

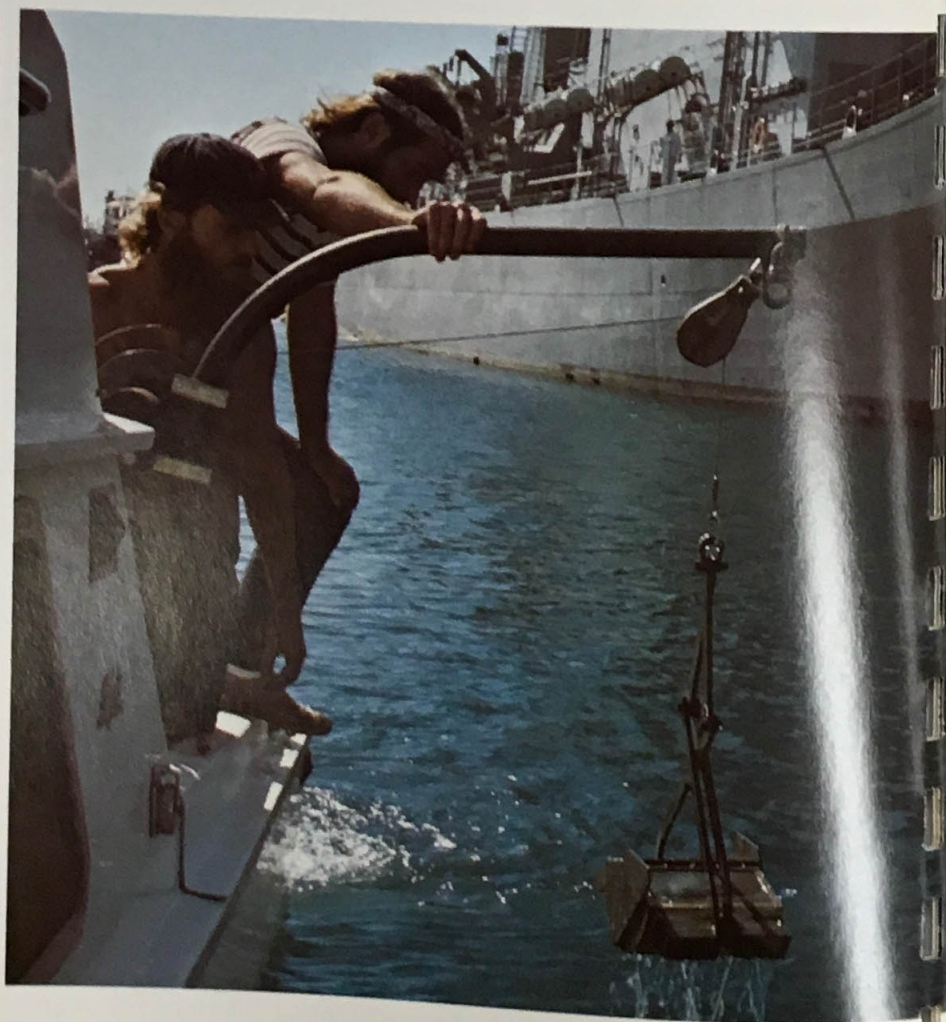
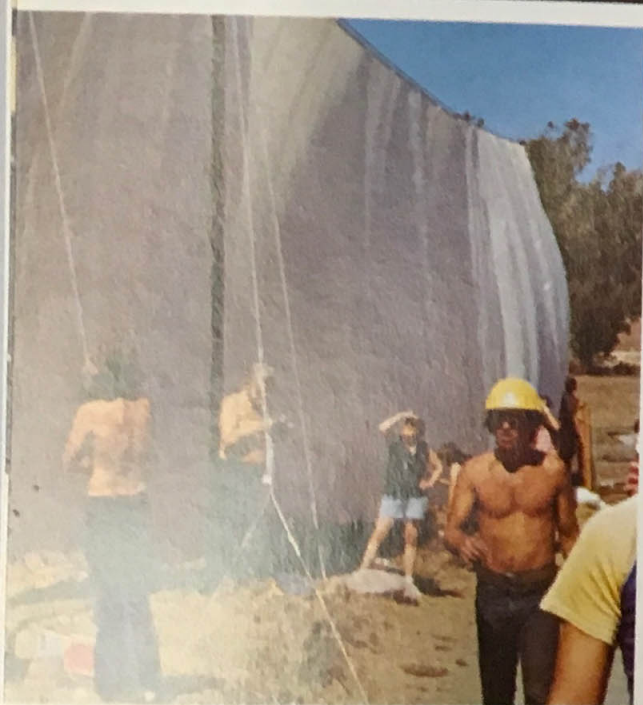
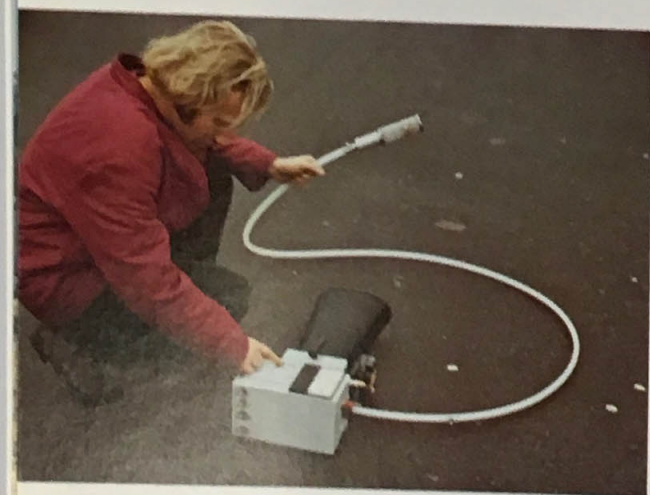
Siting Study: Coal Fired Electric Power Generating Plant—Minnesota

Power Generation Cooling Facilities—Texas Utilities Service, Inc.

Environmental Siting Study for Electric Power Generating Plants and Transmission Lines within the State of Colorado

Radioactive Waste Tank Studies and Analysis—Hanford Atomic Reservation, Washington

Soil-Structure Interaction Study—Electric Power Research Institute, Palo Alto, California



Environment

Left top: Field Tests of Air Quality Monitoring Equipment. Bottom: Christo's Running Fence—Dynamic Art, Northern California Coastline. Right: Biological Sampling of Bottom Sediments in Los Angeles Harbor.

URS pioneered the preparation of environmental impact studies. The URS analysis is broad based, objective, and responsive to legal and administrative requirements. Environmental factors addressed range from archaeology to zoology, including botany, aquatic and terrestrial biology, geology, air quality, meteorology, hydrology, oceanography, aesthetics and economics.

Studies are conducted by multidisciplinary teams which define all practical alternatives during the planning phases of a development. URS contributes greatly to obtaining a favorable decision from controlling agencies by clearly dealing with the advantages and disadvantages of the impact assessment. This approach fully serves the public interest and with this accomplished, allows approval of construction permits in the minimum practicable time.

Extensive environmental research for such agencies as the United States Environmental Protection Agency, the Department of Agriculture, the Corps of Engineers, the United States Navy, and numerous universities has given URS a decided advantage in this highly competitive field.

Representative Studies

ARCO Chemical Company, Petrochemical Complex—Solano County, California

Oakland International Airport—Runway Expansion

Standard Oil Marine Terminal—El Segundo, California

Alternative Crude Oil Pipeline Delivery Systems—Elk Hills Naval Petroleum Reserve #1—California

Transportation Corridors Located in Georgia, Utah, Colorado and Nebraska

Protection, Clean-up and Restoration of Coastal Wet Lands Contaminated by Oil Spills—United States Environmental Protection Agency



Health Care

Left: Independence Sanitarium and Hospital, Independence, Missouri, one of many projects where URS has had an ongoing client relationship leading to the development of a hospital complex that provides the full range of patient health care needs. Right: The acute care tower for the Independence Sanitarium.

URS has planned, programmed and designed over 250 hospitals and clinics in 34 states. Through its Health Care Services group URS provides state-of-the-art capabilities in all areas required in creating modern health care delivery systems.

Faced with increasing federal and state government involvement, new health care insurance approaches, demands for increased ambulatory care, the trend toward health maintenance organizations (HMO's), wage and price restraints, rising interest rates and construction costs, health care industry officials must employ a comprehensive, overall approach to the development of health care facilities.

As one of the largest health care consulting organizations URS can help by providing its Total Services Concept which includes the following:

- Master Health Care Programming
 - Identifying medical health care needs
 - Developing long range facility plans
- Financial Feasibility Studies
 - Operational pro forma statements
 - Capital funding analysis

- Architectural and Engineering Design
- Guaranteed Maximum Price
- Fast Track Architectural and Engineering Design Services
- Construction Management
- Total Services Design/Construct—incorporating all of the above URS capabilities.

Representative Projects

Holzer Medical Center and Clinic, Gallipolis, Ohio

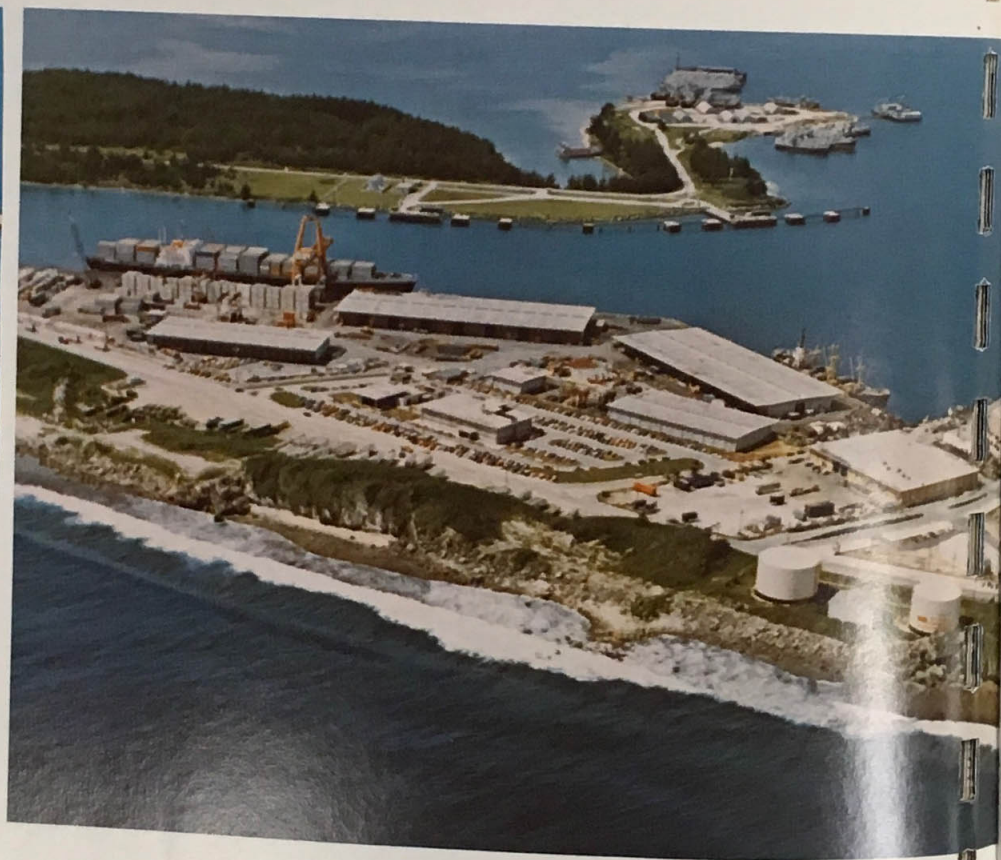
Uniontown Hospital, Uniontown, Pennsylvania

Colquitt County Memorial Hospital, Moultrie, Georgia

Providence-St. Margaret Health Center, Kansas City, Kansas

Independence Sanitarium and Hospital, Independence, Missouri

Standing Memorial Hospital, Seattle, Washington



Marine Facilities

URS prepared the site development studies, definitive designs and contract documents for a design/construct project for port facilities at Ras Al Mish-ab and Sharm Yando in Saudi Arabia as well as for commercial port facilities inside Apra Harbor, Guam.

URS has provided extensive planning and design services for all kinds of commercial, military and recreational marine facilities. URS' comprehensive marine-oriented capabilities enable the company to undertake assignments involving:

- economic planning, analyses and feasibility
- market analysis
- port master planning
- rates, fees, and charges
- detailed design
- design and construction management
- oceanographic engineering
- environmental impact assessment
- marine baseline investigations
- littoral drift/erosion analyses
- seismic analyses
- contingency planning

With these skills URS has been engaged in a variety of marine assignments over the years of which the following are typical:

- complete commercial port planning and design
- wave analysis and modeling studies
- recreational marinas
- dry docks and navigational locks
- ship building and repair facilities
- bulk ocean terminals
- LNG and petroleum projects
- waterfront support facilities

In addition, ongoing research for federal, state and industrial clients has kept URS at the forefront of this expanding area.

Representative Projects

Planning Study of all Water Ports in the State of Florida—Florida Department of Transportation

Trident Service Pier & Port Control Facilities—Bangor, Washington

Master Planning Study for Ports of St. Croix, U.S. Virgin Islands—Virgin Islands Port Authority

Construction Management of \$13 million Expansion of Container Port Facility—U.S. Lines, Inc., New York

Study of Supertanker Berths at Guayanilla Bay, Puerto Rico—Commonwealth Oil & Refining

Analysis of Tanker Operations in the 60,000 to 80,000 Dead Weight Ton Category—Ingram Corporation

Ore Loading Facilities in New Zealand, Saudi Arabia, Brazil, and Peru—Marcona Corporation

Study of Rates, Fees and Charges and Capital Expansion of Puerto Rico Seaports—Puerto Rico Port Authority



Pollution Control

The 30 million gallon per day advanced waste treatment facility for the City of Garland, Texas is scheduled to be fully operational during the 1977 year.

In the 1960s URS recognized the need to integrate considerations of air, water, and land disposal in developing plans and facilities to meet community and regional needs. Presently URS employs over 250 people engaged full time in Pollution Control activities.

The URS objective in the field of pollution control is to provide a multidisciplinary team capable of taking full responsibility for . . .

- monitoring,
 - master planning,
 - design, and
 - construction management
- of required collection, treatment, and disposal facilities. Extensive experience in pollution control ranges from comprehensive field monitoring of effluent and receiving water quality, to the review of applicable local, state and federal standards. This includes the development of appropriate sewer service ordinances, as well as the planning, design, and financial analysis of collection and treatment works.

URS projects have gone beyond conventional treatment plants and include secondary plants employing basic oxygen, as well as the recent design of a 30-million-gallon-per-day advanced waste treatment plant utilizing a chemical/physical treatment process.

Representative Projects

100 MGD Regional Sewage Treatment Facility—Trinity River Authority, Texas

310 MGD Newtown Creek Sewage Treatment Plant, Design Elements—City of New York

208 Texarkana Planning Study—Ark-Tex Council of Governments

Design of Secondary Waste Treatment Facilities—Aberdeen, Washington

Chemical/Physical Wastewater Treatment Plant—Garland, Texas

Air Pollution Control Facilities—Ideal Cement Company, Monolith Portland Midwest Corporation and Southern Colorado Power



Training

Program planning workshops and commercial television studio facilities reflect two of the elements making up URS' training capabilities.

Through its wholly-owned subsidiary, Advanced Systems, Incorporated, URS offers self-administered, video-assisted instructional training programs designed to achieve measurable improvement in many areas of organizational operation. These instructional systems are learner-paced, modular programs in the fields of communications, data processing, engineering, financial planning, management development, manufacturing and marketing.

Currently Advanced Systems maintains a videotaped training library of more than 5,500 hours of results-oriented instruction—over 1,300 videotapes in English and four foreign languages. Additionally, a support staff of more than thirty educational specialists is available to assure the client of successful program implementation. ASI's program developers, production staff and studio facilities meet the highest professional standards in the industry.

More than 90% of the "Fortune 1000" companies have already benefited from these training programs. In the aggregate, ASI has served more than 5,000 clients. Additionally, more than 400 foreign and domestic government agencies as well as more than 100 colleges and universities have already implemented these video-assisted instructional systems.

Representative Clients

American Airlines

Borg-Warner Corporation

Deere and Company

Eastman Kodak Company

FMC Corporation

GAC Corporation

Hewlett-Packard

Investors Diversified Services, Inc.

Kjobenhavns Handelsbank A/S



Transportation

URS' transportation capabilities are reflected in this dramatic photo of the first Boeing 747 to land at the Dallas/Ft. Worth International Airport.

Today's transportation needs are complex and challenging. Proper solutions call for a full understanding of the interrelationship between a wide variety of transportation modes including highways, railroads, surface and subway rapid transit, airport facilities and air passenger and freight operations and marine storage, handling and transportation facilities.

As one of the largest of the nation's transportation consultants, URS has developed extensive experience and a record of skillful performance in this broad field. Its activities include everything from initial research of viable alternatives and complete financial feasibility studies for program funding, to the design and construction management of the project itself.

URS has become a recognized leader in the use of modern cost reducing and time compressing tools, such as phase engineering, quality control, phase construction, separate package bidding and modern project control systems.

Representative Projects

Rockville Corridor Highway Alternatives Study—Maryland Department of Transportation

Master Plan, Design and Construction Supervision of Groundside Facilities—Honolulu

International Airport, Hawaii

\$250 million Rapid Transit Line Extension—New York City Transit Authority

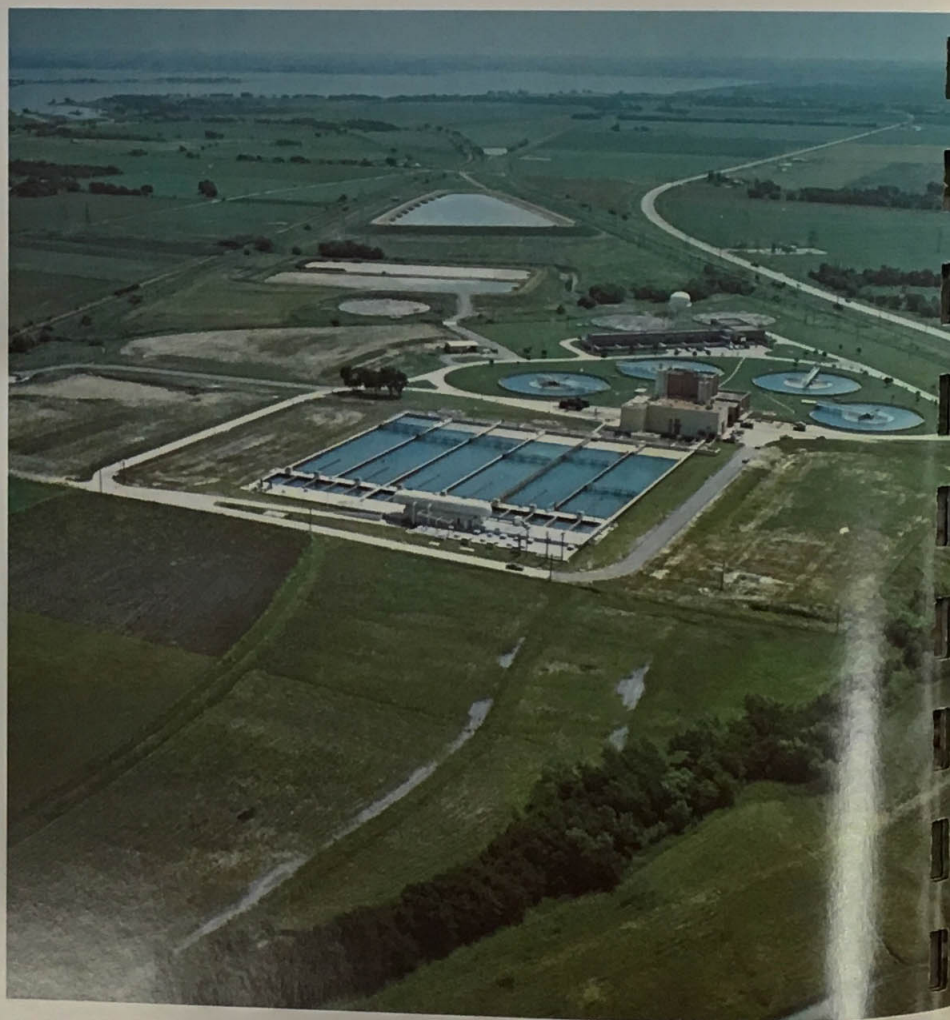
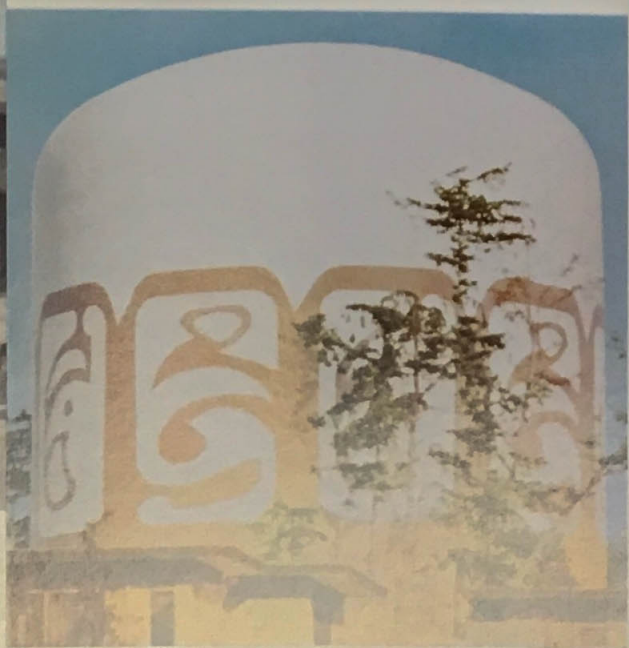
Design of Major Sections of the Washington D.C., Baltimore, and Atlanta Rapid Transit Systems

Dallas/Fort Worth Regional Airport, Design Elements

Arkansas River Railroad Bridge—Kansas City Southern Railroad

Design of Elevated Interstate at Honolulu International Airport—Honolulu, Hawaii

Colorado State Railroad Plan, 4-R Act of 1976



Water Resources

Illustrative water resources projects include the Big Brown Dam and Reservoir, Freestone County, Texas; the 350 million gallon per day North Texas Water Treatment Plant, Wylie, Texas; and, the Steel Water Reservoir designed for King County Water District #24 located near the Sea-Tac Mall Shopping Center, Washington.

With the nation's expanding requirements for fresh consumable water, water districts, area and basin agencies are faced with a dual problem—upgrading the quality of water flowing out of the citizen's tap, and guaranteeing that the quantity is sufficient for domestic, industrial, and agricultural requirements.

Within the framework of government regulations, specifically the Safe Drinking Water Act of 1974, URS project teams assess domestic, industrial, and agricultural water resource and distribution needs. Engineering/social/economic feasibilities are examined. Systems design criteria are developed from a maximum of hard data with documented facts and straightforward contemporary technology, including considerations of brackish water conversion and wastewater reuse.

Design processes are closely managed to assure work progresses on schedule and budget is maintained within an overall water systems design, both flexible and expandable.

Representative Projects

Tocks Island Comprehensive Review—Delaware River Basin—United States Army Corps of Engineers and States of New York, New Jersey, Pennsylvania and Delaware

Metropolitan Water Resources Analysis and Master Plan—Little Rock, Arkansas

Design of Water Transmission Main—Birch Bay, Blaine, Washington

Toledo Bend Reservoir—Sabine River Authorities of Texas and Louisiana

Water Quality Management Plans—Arkansas River Basin, San Pedro and Upper Gila Rivers, Arizona

Master Plan: Water Supply, Storage, and Distribution—Kitsap, Washington

185 MGD Filtration Plant—Saigon Metropolitan Water Supply Authority



Principal Locations

Map Legend

- Principal Offices
- Branch Offices

Corporate Headquarters

URS Corporation
155 Bovet Road
San Mateo, California 94402
415-574-5000
Telex: 331340
Cable: URSCORP

United States

150 E. 42nd Street
New York, New York 10017
212-953-8600

136 Summit Avenue
Montvale, New Jersey 07645
201-573-1100

8700 Stemmons Freeway
Dallas, Texas 75247
214-630-3500

3607 Manor Road
Austin, Texas 78723
512-926-7700

3955 East Exposition Avenue
Denver, Colorado 80209
303-744-1861

130 Jessie Street
San Francisco, California 94105
415-397-2525

9225 Ward Parkway
Kansas City, Missouri 64114
816-333-1400

The Fourth & Vine Building
Seattle, Washington 98121
206-623-6000

North 1522 Washington
Spokane, Washington 99201
509-326-6650

1601 Tonne Road
Elk Grove Village, Illinois 60007
312-593-1790

3501 N. Causeway Boulevard
Metairie, Louisiana 70002
504-837-3976

625 Delaware Avenue
Buffalo, New York 14202
716-883-5525

1854 South Alvernon Way
Tucson, Arizona 85711
602-793-9366

3611 North Black Canyon
Highway
Phoenix, Arizona 85015
602-264-2430

841 Bishop Street, Suite 2108
Honolulu, Hawaii 96813
808-533-3861

1701 N. Fort Myer Drive
Arlington, Virginia 22209
703-524-2277

2765 South Highland Drive
Las Vegas, Nevada 89102
702-734-1193

1225 Tongass Avenue
Ketchikan, Alaska 99901
907-225-6415

International

Cesar Gonzalez No. 510
Roosevelt, Puerto Rico 00926
809-766-0095

Avenue Mariscal Santa Cruz
Edificio Esperanza—10 piso
Casilla, 6791
La Paz, Bolivia

Josef-Gockeln Strasse 8
4000 Düsseldorf
West Germany
(211) 434-842

#1 Knightsbridge Green
London, S.W. 1
England
011-44-1-584-8662

International Projects

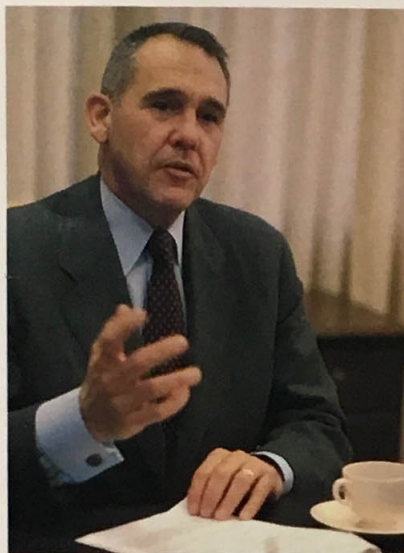


URS

1977
Annual
Report



To Our Shareholders



1977 was an excellent year for URS Corporation in many respects. Most importantly, as depicted in the tabulation below, earnings and revenues continued to grow. Our present planning indicates that 1978 should be another year of solid growth in both earnings and revenues.

A milestone in the Company's history occurred on June 9th when URS raised \$7 million of straight long-term debt. This was the first public debt financing in URS' history and has added substantial additional working capital for funding internal growth and acquisitions. It was an important transaction because it provides some assurance that URS' capital needs for the foreseeable future will be insulated from the frequent and unpredictable changes in the marketplace for long-term credit.

New business booked showed a healthy trend during the year with an ending backlog of \$31.6 million compared with \$22.8 million a year earlier.

Of particular future significance is URS' expanded and substantial involvement in two rapidly growing markets: training and continuing education, and alternative energy sources. On October 31st URS expanded its training activities by acquiring Evelyn Wood Reading Dynamics, Inc. for \$7 million in cash and notes. Evelyn Wood Reading Dynamics, Inc. is the nation's largest and best known organization in the reading enhancement field. On December 7th URS acquired the principal storage rights for two large underground reservoirs in Illinois which are ideally suited for compressed air energy storage (CAES) development.

The potential for these new markets in URS' future is covered more fully in the pages that follow and will give you an insight into why the directors and management of URS Corporation are optimistic about the future for your company.

I would like to express appreciation to URS employees, shareholders and directors for their support, dedication and loyalty during the past year.

Arthur H. Stromberg
President

Highlights	1977	1976	% Increase
Revenues	\$45,942,000	\$36,249,000	27
Net Income	1,943,000	1,518,000	28
Preferred Dividend	(196,000)	(196,000)	-
Net Income applicable to common stock	1,747,000	1,322,000	32
Earnings Per Common Share	.70	.51	37
Common Dividend Per Share	.24	.20	20
Shareholders' Equity	15,885,000	14,694,000	8
Working Capital	14,055,000	8,565,000	64
Total Assets	\$41,097,000	\$30,857,000	33



URS' Present

URS Corporation is an international professional services organization dedicated to improving the quality of man's total environment and to providing the multidisciplinary capabilities required to accomplish that objective.

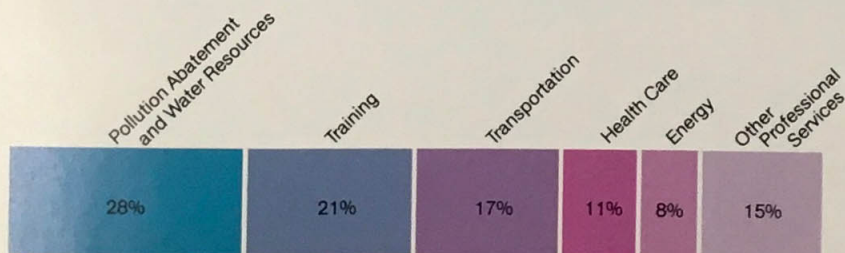
URS has brought together within a single organization distinguished and experienced engineering, training, architectural, planning, environmental and construction management capabilities. With all of the important professional disciplines represented, URS is able to provide a dynamic approach to handling large and complex assignments.

Today URS is one of the largest and most diversified international professional services organizations with a staff of over 1,500. Domestically, offices are located in all the major regions of the United States. Internationally, the Company is doing business in 35 countries and maintains permanent offices in London, Düsseldorf and Toronto.

URS' capabilities cover a wide spectrum from information handling to the planning, design and construction management of health care facilities, municipal and industrial waste treatment plants, water supply and distribution systems, marine facilities and integrated transportation systems. URS' extensive training capabilities include a complete videotaped training library and a world-wide network of offices and training centers.



Expressed as a percentage of revenues in 1977, URS' principal markets were:





and Future

TRAINING & CONTINUING EDUCATION.

Forecasts have confirmed that the market for training and continuing education is already a multi-billion dollar one and will expand substantially over the next ten years.

As a result of the acquisition of Advanced Systems, Incorporated in 1976 and Evelyn Wood Reading Dynamics, Inc. in 1977, URS is in a unique position to participate in this anticipated growth. These two outstanding organizations have brought to URS a state-of-the-art capability in the development of video-assisted training programs, an expanding video library of over 1,300 course titles and a dominant institutional presence in the reading enhancement field.

URS' training and continuing education activities on an annualized basis, including those of Evelyn Wood Reading Dynamics, Inc., now account for approximately 40% of total revenues and show promise of substantial future growth.

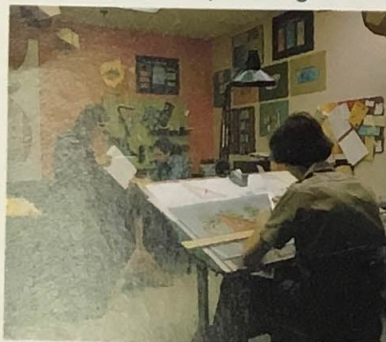
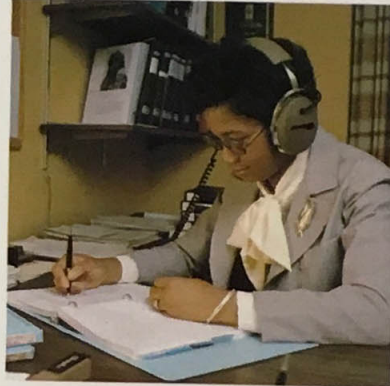
Video Training.

Advanced Systems, Incorporated has established itself as the leader in developing and providing video-

assisted training courses for in-house use by large organizations. Over 90% of the companies making up the "Fortune-1000" have used ASI courses.

ASI provides complete learning systems by means of full-color video tapes, student guides, audio cassettes, and coordinator guides. The video library consists of over 1,300 titles in management, data processing, engineering, manufacturing, marketing and communications.

In addition to the "Fortune-1000" users, over 400 government agencies and more than 100 colleges and universities have utilized ASI courses.



Reading Enhancement.

Evelyn Wood Reading Dynamics, Inc. is the world's largest and most prominent organization in the reading enhancement field. Over one million people have been taught the Evelyn Wood technique for improved reading throughout the United States and abroad. Domestically, the company is training over 35,000 students each year. Members of the White House staffs of the Kennedy, Nixon and Carter administrations have taken the Evelyn Wood Reading Dynamics course.

The course, presented in the format most suited to the learner's requirements, teaches a time-tested technique for increasing

reading speed and comprehension. The technique, perfected by Evelyn Wood after substantial work with natural speed readers in the 1940's, involves use of a variety of latent and non-unique skills which can be taught with important benefits to almost everyone.

The potential for utilizing the Advanced Systems video capabilities for teaching the Evelyn Wood course appears to be substantial and is presently under study.



WHAT HAPPENS WHEN YOU READ DYNAMICALLY?

Reading is thinking with an aid. The aid is the printed page containing the symbols which act as stimuli for the mind. These symbols trigger the mind to think along specific lines.

To improve my reading I must sharpen my thinking. Learning to read generally down the page is mentally challenging. It involves learning and using new patterns of perceiving. The Wood method requires the use of the hand as a pacer--always!

I train myself to move generally down the page, seeing all of the print on the page, all of the words. Not skimming.

I learn to get above the print and view it as if I were in an airplane viewing the city below. As I move down the page, I see whole areas of print. I do not make the eyes follow each motion of the hand slavishly, but let them go where they will.

I look for total concepts within which I become aware of details, all of them when I read intensively.

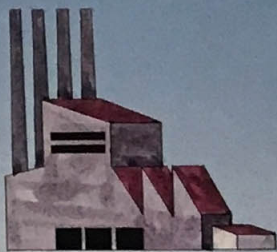
As I sweep my eyes generally down the page, I see all the words on the page, in groups, not individually. I do not hang on to individual words or phrases.

Thus I learn to allow all the words to come in rapidly. I do not have time to stop and consider each word individually, to color the meaning with bias or boredom.

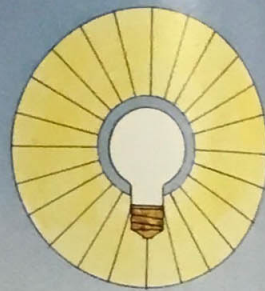
When I read by the Wood method, words come in so fast that I do not have time to consider them until they have become part of the whole idea.

As I read generally down the page, I become more dependent upon feeling, atmosphere, become part of the story, thinking with the author; the usually receive from the reading more vivid and lasting impressions.

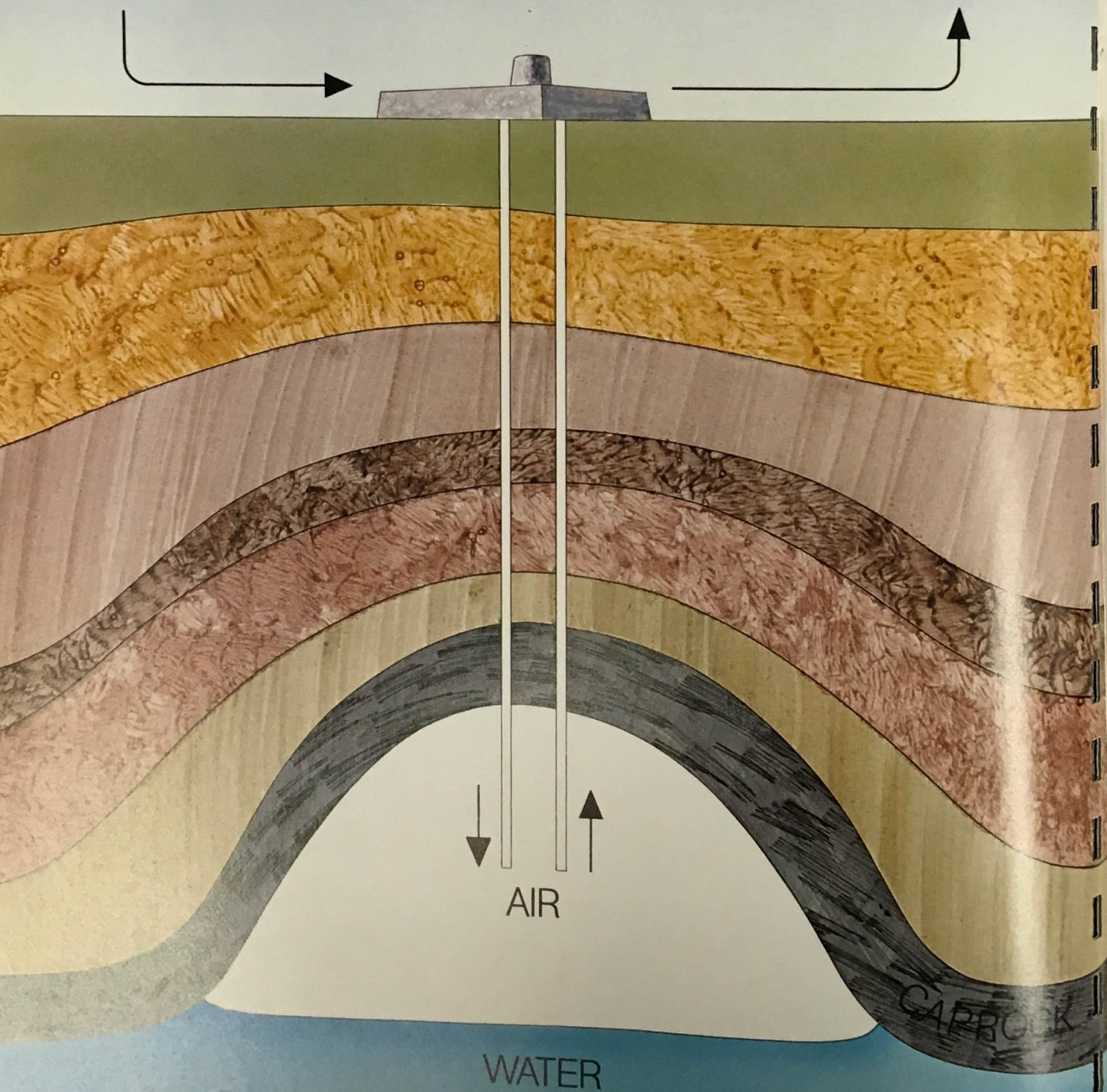
In this way. I must be relaxed, but read actively. I must be relaxed, rather than a vocal reader.



Inexpensive surplus night time electric power is used to compress air which is stored in the underground aquifer.



To meet peak daytime demands, air is released from the aquifer through turbines to produce electricity.



ALTERNATIVE ENERGY SOURCES.

On December 7, 1977, URS Corporation took a major step in expanding its energy activities by acquiring the underground storage rights for the key portions of two large natural storage reservoirs in the State of Illinois. These reservoirs have a combined air or gas storage capacity of 77 billion standard cubic feet and are ideally suited for Compressed Air Energy Storage (CAES) application as well as for the storage of natural gas. The plan is to develop the electric power generating potential of one or both of these large reservoirs.

The CAES technique is a unique and viable solution to the growing nationwide shortage of electric power for meeting peak demand requirements. It involves using surplus electric power available during the low demand periods at nighttime and weekends to pump compressed air into underground storage caverns. Then, during daytime peak demand periods, the compressed air can be released to power turbine generators and provide additional electricity. This technique is well within the current state-of-the-art, conserves the world's shrinking supply of fossil fuels, is cost effective and environmentally clean.

West Germany has designed and built the world's first commercial plant employing the CAES technique. It is located near Huntorf and should be operational early this year. This alternative method for alleviating the nation's peaking power shortages will become

increasingly popular as the electric power generating industry becomes aware of its many advantages over other methods presently under consideration.

Theoretically the two URS reservoirs have sufficient air storage capacity to generate 11,000 megawatts of electricity during an 8-hour day. To put this into perspective from the standpoints of both economics and the conservation of natural resources, a single 1,000 megawatt CAES plant could save as much as 20,000 barrels of oil per day. Based on a price of \$12 dollars per barrel the annual savings would amount to as much as \$87 million.



Huntorf CAES Plant

*Owner: Nordwestdeutsche Kraftwerke
Equipment Engr & Design: Brown Boveri
Technical Data: Power Production
290 MWe*

Consolidated Balance Sheet

October 31,

ASSETS	1977	1976
Cash	\$ 1,078,247	\$ 1,082,191
Short-term investments	6,237,877	3,064,385
Accounts and notes receivable, less allowance for doubtful collections of \$1,254,000 in 1977 and \$1,216,000 in 1976 (Note 11)	7,228,267	6,792,764
Costs and accrued earnings in excess of billings on contracts in process (Note 11) ...	7,676,145	7,763,592
Educational subscriptions and contracts receivable, less unamortized discounts of \$122,000 in 1977 and \$146,000 in 1976 and less allowance for doubtful collections of \$165,000 in 1977 and \$143,000 in 1976	3,515,467	2,587,324
Prepaid taxes, educational inventories and other current assets	1,378,797	1,404,889
Total current assets	27,114,800	22,695,145
Property, equipment and leasehold improvements, at cost (Note 5)	3,314,319	3,245,700
Educational subscriptions and contracts receivable, less unamortized discounts of \$166,000 in 1977 and \$424,000 in 1976 and less allowance for doubtful collections of \$35,000 in 1977	746,888	2,152,027
Deferred educational program production costs	909,545	876,730
Goodwill, \$1,910,372 of which is being amortized	2,092,105	1,072,057
Tradenames and trademarks	5,800,000	
Deferred charges, other assets and long-term receivables (Note 2)	1,119,186	815,627
	\$41,096,843	\$30,857,286
LIABILITIES AND SHAREHOLDERS' EQUITY		
Note payable (Note 3)	\$	\$ 2,000,000
Current maturities of long-term debt (Note 3)	1,432,561	643,504
Current deferred educational subscription income	215,103	722,559
Accounts payable	3,204,750	3,274,521
Accrued salaries and employee benefits	1,648,666	1,368,342
Amounts accrued for profit sharing and bonuses	1,026,171	489,695
Other accrued expenses and liabilities	1,407,750	1,981,218
Billings in excess of costs and accrued earnings on contracts in process	2,183,970	607,354
Accrued income taxes - Currently payable (Note 9)	(585,428)	737,880
- Deferred (Note 9)	2,526,407	2,305,094
Total current liabilities	13,059,950	14,130,167
Long-term debt, net of current maturities (Note 3)	11,632,127	1,342,472
Deferred educational subscription income, royalties and other non-current liabilities ..	495,377	566,860
Deferred income taxes (Note 9)	24,606	
Minority interest in consolidated subsidiary		123,359
Commitments and contingencies (Note 8)		
SHAREHOLDERS' EQUITY		
Preferred Stock, par value of \$1.00 (Note 10); Authorized-1,000,000 shares Outstanding-163,683 shares, Series A \$1.20 Cumulative Convertible (liquidating value of \$12.00 per share or \$1,964,196)	163,683	163,683
Common Stock, par value of \$.25 (Notes 3 and 6); Authorized-10,000,000 shares Outstanding-2,421,442 shares in 1977 and 2,410,427 in 1976	890,505	888,252
Capital surplus	4,956,042	4,934,804
Retained earnings (Note 3)	9,874,553	8,715,842
Less: Common shares in treasury (2,002 shares in 1976)		8,153
Total retained earnings	9,874,553	8,707,689
	15,884,783	14,694,428
	\$41,096,843	\$30,857,286

The accompanying accounting policies and notes to consolidated financial statements are an integral part of this balance sheet.

Consolidated Statement of Income

	Year Ended October 31,	
	1977	1976
REVENUES:		
Professional services	\$44,791,269	\$35,549,814
Other, including interest income	1,150,369	698,897
	45,941,638	36,248,711
COSTS AND EXPENSES:		
Direct costs and expenses	23,757,629	18,130,984
Indirect costs	10,176,437	9,943,381
Selling and general and administrative expenses	6,196,215	3,745,635
Depreciation and amortization	1,296,165	862,950
Interest	529,784	374,964
	41,956,230	33,057,914
Income from continuing operations before provision for income taxes	3,985,408	3,190,797
PROVISION FOR INCOME TAXES (Note 9):		
Current	1,698,299	2,951,574
Deferred	344,054	(1,381,975)
	2,042,353	1,569,599
Income from continuing operations	1,943,055	1,621,198
Income (loss) from discontinued operations, net of tax (Note 4)		(103,017)
Net Income	1,943,055	1,518,181
Preferred Stock dividend requirements (Note 10)	196,420	196,420
Net income applicable to Common Stock	\$ 1,746,635	\$ 1,321,761
PER COMMON AND COMMON EQUIVALENT SHARE (Note 7):		
Income from continuing operations	\$.70	\$.55
Income (loss) from discontinued operations, net of tax (Note 4)		(.04)
Net income applicable to Common Stock	\$.70	\$.51

The accompanying accounting policies and notes to consolidated financial statements are an integral part of this statement.

Consolidated Statement of Changes in Shareholders' Equity

	Preferred Stock		Common Stock		Capital Surplus	Retained Earnings
	Shares	Amount	Shares	Amount		
BALANCE, OCTOBER 31, 1975	163,683	\$163,683	2,681,483 (32,203)	\$888,252	\$4,932,078	\$9,146,758 (112,096)
Acquisition, for cash, of 32,203 treasury shares						
Acquisition of Treasury Stock in accordance with Purchase Agreement, 240,118 shares were retired and returned to status of authorized and unissued shares (Note 3)			(240,118)			(1,142,962)
Expenses incurred in connection with reincorporation in the State of Delaware						(23,529)
Treasury Stock (1,265 shares) issued upon exercise of stock options			1,265		2,726	
Dividends declared or accrued on:						
Preferred Stock						(196,420)
Common Stock						(482,243)
Net income for the year						1,518,181
BALANCE, OCTOBER 31, 1976	163,683	163,683	2,410,427	888,252	4,934,804	8,707,689
Treasury Stock (2,002 shares) issued upon exercise of stock options			2,002		6,227	
Shares issued upon exercise of stock options			9,013	2,253	15,011	
Dividends declared or accrued on:						
Preferred Stock						(196,420)
Common Stock						(579,771)
Net income for the year						1,943,055
BALANCE, OCTOBER 31, 1977	163,683	\$163,683	2,421,442	\$890,505	\$4,956,042	\$9,874,553

The accompanying accounting policies and notes to consolidated financial statements are an integral part of this statement.

Consolidated Statement of Changes in Financial Position

Year Ended October 31,

1977

1976

FINANCIAL RESOURCES WERE PROVIDED BY:

Income from continuing operations	\$ 1,943,055	\$ 1,621,198
Charges to income not affecting working capital—		
Net income applicable to minority interest		64,582
Depreciation and amortization	1,236,438	847,400
Amortization and write-off of goodwill, including \$216,809 in 1977		
related to net operating loss benefits of purchased company	276,536	117,503
Continuing operations	3,456,029	2,650,683
Discontinued operations, net of tax		(103,017)
Charges to discontinued operations not affecting working capital		222,930
Long-term liabilities of purchased training subsidiary at date of acquisition		709,317
Proceeds on sale of property and equipment		180,171
Proceeds on sale of bonds	111,717	139,175
Increase in non-current liabilities and deferred income taxes	421,081	
Reduction in long-term receivables	48,585	10,921
Reduction in long-term educational subscriptions and contracts receivable	1,405,139	526,884
Reduction in other assets including investments in joint ventures	100,581	122,693
Proceeds on exercise of stock options	23,491	
Increase in long-term debt, including proceeds from issuance of		
\$7,000,000 in debentures in 1977	10,799,500	405,751
Other		2,726
Total resources provided	16,366,123	4,868,234

FINANCIAL RESOURCES WERE USED FOR:

Increase in deferred educational program production costs	520,809	251,756
Purchase of property and equipment	663,955	603,094
Acquisition of treasury stock		1,255,058
Reduction in long-term debt	509,845	169,118
Reduction in non-current deferred educational subscription income	467,958	120,460
Additional investments in joint ventures		74,631
Increase in long-term receivables		49,582
Dividends declared or accrued on preferred stock	196,420	196,420
Dividends declared or accrued on common stock	579,771	482,243
Acquisition of minority interest	213,308	
Deferred debt expense related to debentures	515,820	
Assets of acquired training subsidiary including \$833,237 of negative working capital:		1,991,588
Long-term receivables, net of related deferred income		891,985
Deferred educational program production costs		1,417,684
Property, equipment and leasehold improvements		310,781
Other long-term assets		988,511
Goodwill		
Assets of acquired subsidiary, excluding \$259,365 working capital acquired:	56,368	
Property, equipment and leasehold improvements	25,845	
Other long-term assets	783,763	
Goodwill		
Assets of acquired training subsidiary, excluding \$901,950 working capital acquired:	5,800,000	
Tradenames and trademarks	103,092	
Property and other long-term assets	420,364	
Goodwill	18,933	43,119
Other		
Total resources used	10,876,251	8,846,030
Increase (decrease) in working capital	\$ 5,489,872	\$(3,977,796)

Consolidated Statement of Changes in Financial Position—(Continued)

Year Ended October 31,

	1977	1976
ANALYSIS OF CHANGES IN WORKING CAPITAL		
INCREASE (DECREASE) IN CURRENT ASSETS:		
Cash and short-term investments	\$ 3,169,548	\$(1,750,043)
Accounts and notes receivable	435,503	(899,244)
Costs and accrued earnings in excess of billings on contracts in process	(87,447)	136,873
Educational subscriptions and contracts receivable	928,143	2,587,324
Prepaid taxes, educational inventories and other current assets	(26,092)	1,207,789
Total	4,419,655	1,282,699
(INCREASE) DECREASE IN CURRENT LIABILITIES:		
Current maturities of long-term debt and note payable	1,210,943	(2,588,084)
Accounts payable	69,771	(1,595,002)
Current deferred educational subscription income	507,456	(722,559)
Accrued salaries and employee benefits	(280,324)	(272,547)
Amounts accrued for profit sharing and bonuses	(536,476)	(220,363)
Other accrued expenses and liabilities	573,468	(1,335,190)
Billings in excess of costs and accrued earnings on contracts in process	(1,576,616)	24,109
Accrued income taxes:		
Current	1,323,308	(118,576)
Deferred	(221,313)	1,567,717
Total	1,070,217	(5,260,495)
Increase (decrease) in working capital	\$ 5,489,872	\$(3,977,796)

The accompanying accounting policies and notes to consolidated financial statements are an integral part of this statement.

Accounting Policies**Principles of Consolidation and Basis of Presentation**

The consolidated financial statements include the accounts of URS and all of its subsidiaries. All significant intercompany accounts and transactions have been eliminated.

The results of operations of businesses acquired in transactions accounted for as poolings of interest are included for all periods presented; the results of operations of businesses acquired in transactions accounted for as purchases are normally included from the dates of effective control.

The Company's video-assisted training subsidiary, Advanced Systems, Inc. (ASI), was acquired in 1976 in a series of transactions and became wholly-owned on October 4, 1976. The acquisition of ASI has been accounted for as a purchase and the Company's appropriate share of the results of ASI's operations subsequent to its initial equity interest (March 1976) is included in the accompanying statement of income.

The Company acquired McPhee, Smith, Rosenstein Engineers (MSR), a New Jersey consulting organization, on January 4, 1977 and MSR became wholly-owned on that date. The acquisition of MSR has been accounted for as a purchase and the Company's appropriate share of the

results of MSR operations are included in the accompanying statement of income.

The Company's reading enhancement training subsidiary, Evelyn Wood Reading Dynamics, Inc. (EWRD), was acquired in October 1977. The acquisition of EWRD has been accounted for as a purchase and the results of EWRD's operations subsequent to the Company's effective control (October 1, 1977) will be included in subsequent statements of income. No amounts for EWRD are included in the accompanying statement of income for October 1977 because the effect of their inclusion would not be significant. For purposes of the accompanying consolidated balance sheet of the Company, amounts for EWRD are based upon the most recent audited (September 30, 1977) financial statements available. There has been no significant change to October 31, 1977.

The Company, under its contractual arrangements, often recovers a portion of indirect costs and general and administrative expenses. The Company, therefore, initially summarizes data in the consolidated statement of income after all costs and expenses; gross profit amounts are not separately stated after direct costs and expenses.

Revenue Recognition

Revenues and profits on fixed fee (including percentage of construction cost) type contracts are recorded on the percentage of completion basis, generally determined by the ratio of costs incurred to management's estimate of total anticipated costs. Revenues and profits on time and material type contracts are recorded based upon the provisions of the applicable contracts. Revenues and profits on certain contracts are determined as a percentage of the related project construction cost. During 1977, revenues less direct and other related expenses, on a contract where revenue was earned as a percentage of project construction costs, increased approximately \$180,000 (1976 - \$600,000) due to revisions in project construction estimates. If estimated total costs on any contract indicate a loss, the Company provides currently for the total loss anticipated on the contract.

Educational contract product sales are recorded as the materials are shipped. The payment terms on contract sales vary but generally do not exceed two years. Educational course library subscription (rental) agreements are written for varying periods (generally three to four years) with a minimum guaranteed fee. The Company has adopted the policy at date of acquisition of its video-assisted training subsidiary of recording the revenues on these contracts as the library is utilized or as the minimum guaranteed fee is billed (if such billing approximates usage). The related expenses are recorded to match the revenues.

Deferred Educational Program Production Costs

Costs incurred by the Company in the original production of, and improvements to, educational courses are capitalized and amortized by the straight-line method over four years.

Income Taxes

The Company and certain of its subsidiaries report income and expenses on the cash or modified cash method for tax reporting purposes and on the accrual method for financial reporting purposes. The Company has elected the installment basis for tax reporting on qualifying educational contract receivables. Deferred taxes are provided on the related timing differences.

Investment tax credits are treated as a reduction of income tax expense in the year in which related assets are placed in service.

Profit Sharing and Bonus Plans

The Company and its subsidiaries have profit sharing and bonus plans, the contributions to which are made at the discretion of the Board of Directors. The contributions are generally based upon pre-tax income.

Depreciation and Amortization

Depreciation and amortization are computed principally on the straight-line method using estimated useful lives

of 3 to 10 years for depreciable assets other than leasehold improvements, which are amortized over the terms of the related leases, and a building which is being depreciated over 35 years.

Goodwill

Goodwill is reduced by an amount equivalent to amortization over 20-25 years except for \$181,733 which arose prior to the effective date of Accounting Principles Board Opinion No. 17 and as to which the Company does not believe there has been any diminution in value.

Tradenames and Trademarks

Tradenames and trademarks are amortized over 40 years.

Notes To Consolidated Financial Statements

Note 1 - Acquisitions

1976 - Advanced Systems

The Company's training subsidiary, Advanced Systems, Incorporated (ASI), was acquired in 1976 in a series of transactions and became wholly-owned on October 4, 1976. The acquisition of ASI has been accounted for as a purchase and the Company's appropriate share of the results of ASI's operations subsequent to its initial equity interest (March 1976) is included in the accompanying statement of income. The cost of ASI was approximately \$4,891,000 in cash. There are no contingent payments, options or commitments related to this acquisition.

ASI summary data, previously reported and filed with the Securities and Exchange Commission, which was not examined by the Company's independent public accountants, Arthur Andersen & Co., for the year ended March 31, 1976 was as follows:

	(\$000 Omitted) Year Ended March 31, 1976
Revenue	\$8,962
Income before provision for income taxes	\$213
Net income (loss)	\$ (16)

Management has determined that the presentation of summary pro forma revenue, income before tax and net income data for the Company as if ASI had been acquired at the beginning of 1976 is not practicable nor meaningful because of several factors including: (1) ASI's changed emphasis in January 1976 in its revenue producing agreements, decreasing certain rental plans and increasing emphasis of installment sales plans; (2) adoption by the Company of different accounting policies for ASI;

(3) assumptions involved in the allocation of the effect of certain of the purchase accounting adjustments; and (4) ASI's prior practice of closing its books and records only quarterly where the quarters didn't coincide with the Company's. Because of the change in emphasis from rental agreements to installment sales agreements, the Company doesn't believe the pro forma presentations of the past are indicative of future operations. ASI's contribution to the results of operations for the seven months ended October 31, 1976 was approximately \$25,000, net of tax. ASI's revenues of approximately \$4,000,000 for the seven months ended October 31, 1976 were included in the Company's consolidated revenues.

1977 – McPhee, Smith, Rosenstein Engineers

The Company acquired McPhee, Smith, Rosenstein Engineers (MSR), a New Jersey consulting organization, on January 4, 1977 for \$1,100,000 in cash and notes. The acquisition is being accounted for as a purchase. The following is a summary, on a pro forma basis, of the results of operations of the Company for the years ended October 31, 1977 and 1976 as though the acquisition had taken place at the beginning of the respective periods:

	(\$000 Omitted) Year Ended October 31, (Unaudited)	
	1977	1976
Revenue	\$46,335	\$38,101
Income before provision for income taxes ..	\$ 3,998	\$ 3,291
Net income applicable to common stock ...	\$ 1,754	\$ 1,353
Per common and common equivalent share .	\$.70	\$.52

There are no contingent payments, options or commitments related to this acquisition.

1977 – Access Data Systems

The Company acquired all the remaining shares of Access Data Systems, Inc. (ADSI), which provides data processing services for credit unions, for \$4.00 per share in cash (approximately \$234,000) on April 28, 1977. The Company previously owned approximately 66% of ADSI's outstanding shares and ADSI's financial statements have been consistently included in the Company's consolidated financial statements during the Company's majority ownership position.

Pro forma information as if the Company had acquired 100% of ADSI at the beginning of fiscal 1977 and 1976 is not presented because the effect on net income would be less than \$.01 per share during either period.

There are no contingent payments, options or commitments related to this acquisition.

1977 – Evelyn Wood Reading Dynamics

The Company acquired Evelyn Wood Reading Dynamics,

Inc. (EWRD) on October 31, 1977 (effective control for accounting purposes was obtained October 1, 1977) for \$7,000,000 in cash and notes. The acquisition is being accounted for as a purchase. As described in the Statement of Accounting Policies, no amounts for EWRD are included in the statement of income of the Company for the year ended October 31, 1977. The following is a summary, on a pro forma basis, of the results of the operations of the Company to include EWRD for the years ended October 31, 1977 and 1976 as though the acquisition had taken place at the beginning of the respective periods. Amounts included for EWRD were examined by auditors other than the Company's independent public accountants, Arthur Andersen & Co., and are based upon EWRD's fiscal year which ended September 30, 1977 and 1976:

	(\$000 Omitted) Year Ended October 31, (Unaudited)	
	1977	1976
Revenue	\$58,163	\$47,217
Income before provision for income taxes ..	\$ 5,658	\$ 3,468
Net income applicable to common stock ...	\$ 2,584	\$ 1,362
Per common and common equivalent share .	\$1.03	\$.52

There are no contingent payments, options or commitments related to this acquisition.

NOTE 2 – Deferred Charges, Other Assets and Long-Term Receivables

During 1973, one of the URS Companies received payment against retainages due on certain of its contracts. At the time of receipt, the Company agreed to invest these funds in interest bearing municipal and state bonds. These bonds, stated at the lower of cost or market value, are included in other assets and amounted to \$173,000 at October 31, 1977 and \$255,000 at October 31, 1976.

Also included are investments in joint ventures of \$193,000 at October 31, 1977 and \$319,000 at October 31, 1976 and \$73,102 of costs at October 31, 1977 associated with the Company's rights to two underground storage reservoirs discussed in Note 14, and deferred debt expense of \$537,000 at October 31, 1977 (less amortization of \$22,000).

NOTE 3 – Notes Payable and Long-Term Debt

The note payable outstanding at October 31, 1976 was unsecured and was repaid on November 18, 1976. Interest was paid on the note at the bank's prime rate and, during the debt's term, the Company maintained a 10% compensating balance (which was not legally restricted) for an effective rate of 7.4%. The Company maintained no other compensating balances during 1977 or 1976 and no compensating balances were maintained on behalf of the Company by any third party.

Long-term debt consists of:

	October 31,	
	1977	1976
Equipment purchase contracts due in monthly installments of principal and interest (at 9%) of \$6,830 through June 1984, secured by equipment ^(a)	\$ 319,488	\$ 373,119
Installment purchase contract, due January 1978, together with interest at 8%, secured by 240,118 shares of Registrant's common stock ^(b)	405,752	811,503
Installment notes, due in equal annual installments of principal together with interest at 7% through January 1982 ^(c)	1,000,000	
Subordinated installment notes, due January 3, 1978 ^(d)	514,240	
Subordinated installment notes, due October 31, 1981 with interest at 8% payable quarterly ^(d)	2,999,500	
Non-interest bearing obligation issued to acquire various franchises, \$81,918 due in 1978 and \$36,805 due in 1979 ^{(a) (e)}	118,723	
Non-interest bearing obligation issued in connection with settlement of litigation, due in annual installments of \$25,000 through 1980 ^(a)	75,000	
Note payable to bank in monthly installments through December 1979, interest at 1½% above bank's minimum commercial lending rate (9¼% at October 31, 1977), secured by equipment ^(a)	68,863	127,887
Notes payable in monthly installments through July 1977 ^(a)		30,500
Mortgage note payable in monthly installments through February 2001, interest at 10¾%, secured by building ^(a)	418,469	422,522
Capitalized lease obligation, payable in monthly installments through September 1980, secured by equipment ^(a)	131,681	200,383
8½% Debentures due June 1, 1982 ^(f)	1,500,000	
9½% Sinking Fund Debentures due June 1, 1987 ^(f)	2,250,000	
9½% Sinking Fund Debentures due June 1, 1992 ^(f)	3,250,000	
Other	12,972	20,062
	13,064,688	1,985,976
Less: current maturities	1,432,561	643,504
	\$11,632,127	\$1,342,472

^(a) These are obligations of subsidiaries that are not guaranteed by the Company.

^(b) This is an obligation due a major shareholder to purchase 240,118 shares of common stock.

^(c) These are installment notes issued as a part of the acquisition of McPhee, Smith, Rosenstein Engineers (MSR).

^(d) These are installment notes issued as a part of the acquisition of Evelyn Wood Reading Dynamics, Inc.

^(e) Under the terms of the purchase agreement, the former franchisee has retained a security interest in notes receivable sold to the Company which amounts to \$394,000 at October 31, 1977.

^(f) The Company's sinking fund requirements for the years 1983 through 1986 are \$450,000, and for the years 1988 through 1991 are \$650,000. As long as any Debentures remain outstanding, the Company is prohibited from making a distribution of assets and from making certain other payments except out of surplus available for dividends under applicable state law and then only in an aggregate amount not in excess of the sum of \$2,250,000 plus 50% of Net Income after October 31, 1976, and only if after giving effect to such distribution, or other payment, Net Working Capital would be not less than \$10 million.

The total net book value of property and equipment pledged as collateral for the secured long-term debt was \$978,000 at October 31, 1977.

NOTE 4 – Discontinued Operations

The Company discontinued the activities of its Matrix Division and abandoned the use of the Matrix name in October 1976. The division was acquired in 1969 and its principal business was in the area of human factors engineering. The division had not significantly impacted the net income of the Company since 1970. The write-off of tradename and goodwill, net of income taxes of \$114,689, was \$103,017.

Revenues applicable to discontinued operations are not significant.

NOTE 5–Property, Equipment and Leasehold Improvements consisted of:

	1977	1976
Land	\$ 150,000	\$ 150,000
Building	600,157	598,082
Furniture and fixtures	2,079,260	1,680,216
Equipment	2,020,846	1,874,413
Leasehold improvements	815,799	823,251
	5,666,062	5,125,962
Less: Accumulated depreciation and amortization	(2,351,743)	(1,880,262)
	\$3,314,319	\$3,245,700

NOTE 6 – Stock Option Plans

As of October 31, 1977, the Company had a Qualified Stock Option Plan (adopted in 1972), a Non-Qualified Stock Option Plan (adopted in 1971), and two Alternative

Stock Option Plans (one adopted in 1971, the other in 1974).

The Qualified Plan provides for grants, to eligible officers and key employees of URS and its subsidiaries, of options to purchase shares of URS common stock at a price not less than the market value at date of grant. The options may be exercised for a period of five years from the dates granted and, generally, become exercisable in three equal annual installments commencing one year from the date granted. At October 31, 1977 and 1976, 295,120 and 298,735 shares, respectively, of URS common stock were reserved for issuance under these Plans, and 87,820 and 62,335 unoptioned shares were available for the granting of options. At October 31, 1977 there were options outstanding for 224,300 shares at prices from \$1.625 to \$7.50, for a total of \$863,101; this includes exercisable options of 99,565 shares at prices which range from \$1.625 to \$7.50 for a total of \$371,342.

The Non-Qualified Plan provides for grants of options to purchase shares of URS common stock to directors, officers and key employees of URS and its subsidiaries at prices and for periods (not to exceed 10 years) as determined by the Board of Directors. At October 31, 1977 and 1976, 87,000 shares of URS common stock were reserved for issuance under this Plan, and 70,000 unoptioned shares were available for the granting of options. At October 31, 1977 there were options outstanding for 17,000 shares at a price of \$2.875, for a total of \$48,875, 10,200 of which are currently exercisable for a total of \$29,325.

The Alternative Plans provide for grants, to selected holders of options outstanding under the Qualified Plans, of options to purchase shares of URS common stock at a price not less than the market value at date of grant. These options become exercisable at the time and to the extent that Qualified options expire. As a result, these Plans do not change the number of shares of URS common stock reserved for issuance under the Qualified Plans. There were 164,309 options outstanding under these Plans at October 31, 1977, 72,159 of which were granted at \$3.625 per share and 92,150 at \$1.875, for a total of \$434,357.

NOTE 7—Net Income Per Common and Common Equivalent Share

Net income (loss) per common and common equivalent share calculations are based on the weighted average number of common shares outstanding each year and on shares issuable under stock options which have a dilutive effect. The Company's preferred stock is anti-dilutive and the additional effect on a fully diluted basis of stock options is not significant. The computations are made by dividing the appropriate income amounts (after preferred stock dividend requirements) by the average common and common equivalent shares outstanding (2,509,243 in 1977 and 2,603,358 in 1976).

NOTE 8—Commitments and Contingencies

Suits pending are routine litigation incidental to the business of the Company and its subsidiaries and are covered by liability insurance, except for varying deductibles which are generally not significant and are provided for in the accompanying financial statements as necessary.

Certain of the earnings of URS and its subsidiaries are subject to renegotiation under The Renegotiation Act of 1951. In the opinion of management, no refunds will be required as a result of renegotiation proceedings.

A subsidiary of the Company is obligated to pay a former stockholder each month a sum equal to 3% of gross income from reading enhancement franchises in certain areas. This obligation extends through May 31, 1980. The amount estimated to be payable under this agreement during 1978 is \$198,000.

The Company and its subsidiaries have entered into employment and consulting agreements with certain individuals, which agreements terminate at various dates through 1981. In general, these agreements provide for annual payments to the individuals so long as they actively provide services for the Company. In addition, payments are being made to a former employee and director of the Company through 1989. Amounts payable under these agreements are as follows:

Year Ended October 31,	Amount
1978	\$632,160
1979	\$470,000
1980	\$427,785
1981	\$174,330
1982-1989	\$245,667

The Company and its subsidiaries occupy certain of their facilities under long-term lease agreements, expiring at varying dates through 1992, which provide for approximate aggregate rentals (net of noncancellable subleases) as follows:

Year Ended October 31,	Amount
1978	\$1,326,889
1979	\$1,151,200
1980	\$1,050,037
1981	\$ 879,147
1982	\$ 627,417
1983-1987	\$1,735,503
1988-1992	\$ 669,174

Lease payments for the above mentioned leases in 1977 and 1976 amounted to \$1,409,149 and \$1,332,366, respectively, which amounts are net of rentals from subleases of \$487,586 and \$318,557, respectively. Certain of the leases are subject to escalation based upon property taxes and operating expenses.

A subsidiary of the Company is contingently liable at October 31, 1977 for approximately \$249,000 of receivables sold to a bank in 1976 with recourse. Substantially all of these receivables are expected to be collected in 1978.

NOTE 9—Income Taxes

The provision for income taxes consists of the following:

	October 31,	
	1977	1976
Current:		
Federal	\$1,583,554	\$2,462,442
State	114,745	489,132
	1,698,299	2,951,574
Deferred:		
Federal	235,675	(1,009,198)
State	108,379	(372,777)
	344,054	(1,381,975)
Total	\$2,042,353	\$1,569,599

The deferred taxes result primarily from the Company and certain of its subsidiaries reporting income and expenses on the cash or modified cash method for tax reporting purposes and on the accrual method for financial reporting purposes and from the election by a subsidiary of the installment method for reporting certain accounts receivable for tax purposes.

The total income tax provision for the years presented differs from the amounts computed by applying the U.S. federal income tax rate of 48% to income before tax. The reasons for these differences are as follows (000's omitted):

	Amount		Percent of	
	1977	1976	1977	1976
Tax provision at statutory rate	\$1,913	\$1,532	48.0%	48.0%
Investment tax credit on purchase of assets	(9)	(19)	(.2)	(.6)
State income taxes, net of Federal income tax benefit	116	60	2.9	1.9
Other, net	22	(3)	.6	(.1)
Actual tax provision	\$2,042	\$1,570	51.3%	49.2%

NOTE 10—Preferred Stock

The Preferred Stock carries cumulative annual dividends of \$1.20 per share, has a par value of \$1.00 per share, and has no voting rights other than by reason of the happening of certain events.

Upon liquidation or insolvency of the Company, the owner of each preferred share would be entitled to the payment of \$12.00, which aggregates \$1,964,196, plus accrued dividends. This payment would be due after all claims of creditors had been satisfied but before any payments to holders of Common Stock.

Each share of Preferred Stock is convertible into 1½ shares of Common Stock at any time prior to May 31, 1985.

NOTE 11—Accounts Receivable and Costs and Accrued Earnings in Excess of Billings on Contracts in Process

The Company's normal operating cycle for certain of its services is longer than one year, and accordingly, the receivables and unbilled costs and accrued earnings relating to those services may not be realized in cash within one year. The amount of these receivables and unbilled costs and accrued earnings not realizable within one year is not determinable; however, the amount has not been and is not expected to be material. Amounts related to retentions, claims, disputes, etc. are not material. Unbilled costs principally include labor and related costs and reimbursable direct and indirect costs. Unbilled costs and accrued earnings are not net of progress payments because such costs are initially billed and included in accounts receivable before progress payments are received.

NOTE 12—Quarterly Financial Data (Unaudited)

Quarterly financial data (\$000 omitted except for per share amounts) for 1977 is summarized as follows:

	Quarter Ended			
	Jan. 31	April 30	July 31	Oct. 31
Revenues	\$10,445	\$11,411	\$11,587	\$12,499
Income before provision for income taxes	758	970	1,146	1,111
Income before preferred stock dividend requirement	386	452	552	553
Net income applicable to common stock	\$337	\$403	\$503	\$504
Earnings per share applicable to common stock ..	\$.14	\$.16	\$.20	\$.20

NOTE 13—Reclassifications

Certain amounts in the 1976 financial statements have been reclassified to conform with the presentation used in 1977. Such reclassifications were not material.

NOTE 14—Subsequent Event

The Company announced on December 8, 1977 that it had exercised its option to purchase the underground storage rights for the key portions of two of the largest natural storage reservoirs in the State of Illinois. These reservoirs have a combined potential storage volume of approximately 77 billion standard cubic feet. The Company believes that these storage caverns, known as aquifers, are ideally suited for Compressed Air Energy Storage (CAES) and the Company intends to develop the electric generating potential of these two storage reservoirs. The exercise of this option brings the Company's total investment in this project to \$405,914 (including the amount indicated in Note 2).

Report of Independent Public Accountants

To The Shareholders and Board of Directors, URS Corporation

We have examined the consolidated balance sheet of URS Corporation (a Delaware corporation) and subsidiary companies as of October 31, 1977 and 1976, and the related statements of income, changes in shareholders' equity and changes in financial position for the years then ended. Our examination was made in accordance with generally accepted auditing standards, and accordingly included such tests of the accounting records and such other auditing procedures as we considered necessary in the circumstances.

In our opinion, the accompanying financial statements present fairly the financial position of URS Corporation and subsidiary companies as of October 31, 1977 and 1976, and the results of their operations and changes in their financial position for the years then ended, in conformity with generally accepted accounting principles applied on a consistent basis during the periods.

ARTHUR ANDERSEN & CO.

San Francisco, California
December 19, 1977

Summary of Consolidated Operations

The following is a summary of the consolidated operations of URS Corporation and subsidiary companies for the five years ended October 31, 1977. The summary should be read

in conjunction with the financial statements and accounting policies and notes to the consolidated financial statements which appear on pages 10 to 19.

	Year Ended October 31,				
	1977	1976	1975	1974	1973
Continuing Operations:					
Revenues from professional services	\$44,791,269	\$35,549,814	\$31,181,003	\$31,320,619	\$28,444,086
Other income	1,150,369	698,897	514,170	444,215	394,667
	45,941,638	36,248,711	31,695,173	31,764,834	28,838,753
Direct costs and expenses	23,757,629	18,130,984	18,070,028	17,445,281	15,064,683
Indirect costs	10,176,437	9,943,381	9,443,980	9,907,747	7,216,714
Selling and general and administrative expenses	6,196,215	3,745,635	1,093,796	836,291	2,384,741
Depreciation and amortization	1,296,165	862,950	424,201	372,769	293,555
Interest	529,784	374,964	15,693	15,691	68,398
	41,956,230	33,057,914	29,047,698	28,577,779	25,028,091
Income from continuing operations before provision for income taxes	3,985,408	3,190,797	2,647,475	3,187,055	3,810,662
Provision for income taxes:					
Current	1,698,299	2,951,574	1,536,507	1,004,732	1,681,889
Deferred	344,054	(1,381,975)	(251,014)	495,407	262,649
Income from continuing operations	1,943,055	1,621,198	1,361,982	1,686,916	1,866,124
Income (loss) from discontinued operations, net of tax		(103,017)	145,380	123,634	67,739
Income before extraordinary items	1,943,055	1,518,181	1,507,362	1,810,550	1,933,863
Extraordinary items					118,887
Net Income	1,943,055	1,518,181	1,507,362	1,810,550	2,052,750
Preferred Stock dividend requirements	196,420	196,420	90,062		
Net income applicable to common stock	\$ 1,746,635	\$ 1,321,761	\$ 1,417,300	\$ 1,810,550	\$ 2,052,750
Per common and common equivalent share:					
Income from continuing operations	\$.70	\$.55	\$.41	\$.50	\$.54
Income (loss) from discontinued operations		(.04)	.05	.04	.02
Income before extraordinary items	.70	.51	.46	.54	.56
Extraordinary items					.03
Net income applicable to common stock	\$.70	\$.51	\$.46	\$.54	\$.59
Average common and common equivalent shares outstanding	2,509,243	2,603,358	3,080,831	3,369,906	3,471,320
Dividends declared per share:					
Preferred Stock	\$1.20	\$1.20	\$.60		
Common Stock	\$.24	\$.20			

Management's Discussion and Analysis of the Summary of Consolidated Operations

In the opinion of the Company's management, the following sets forth the reasons for those changes in the Summary of Consolidated Operations, which management views as significant or were greater than 10%, between the fiscal years ended October 31, 1977 and 1976, and between 1976 and 1975.

1977-1976

Revenues from professional services increased \$9,241,455 or 26%, for the year ended October 31, 1977 over the comparable year in 1976, primarily due to the effect of the acquisition of Advanced Systems, Incorporated (ASI) (see Note 1 to the Consolidated Financial Statements) and the January 1977 acquisition of URS/MSR Engineers (MSR) (approximately \$5,830,000 and \$1,832,000 respectively). Exclusive of ASI and MSR, revenues from professional services increased by 4%. Other income (including interest income) increased \$451,472 or 65%, of which \$174,640 was due to the addition of imputed interest on receivables relating to ASI, and \$283,049 was due to the receipt of the terminal dividend from a discontinued pension plan. The remainder, a decrease of \$6,217, relates principally to a reduction in short-term investments.

Direct costs and expenses increased \$5,626,645 or 31%. \$2,842,711 or 16% of the increase was attributable to ASI and \$1,144,061 or 6% to MSR. The balance, \$1,639,873 or 9%, was related to the Company's revenue growth.

Indirect costs increased \$233,056 or 2%. Exclusive of MSR related costs of \$640,831, indirect costs decreased 4% reflecting some improvement in productivity. Selling and general and administrative expenses increased \$2,450,580 or 65%. The major factor in the increase related to ASI and amounted to \$2,036,862, or 83% of the total increase. Apart from ASI, the increase was \$413,718 or 11%, due principally to increased legal and auditing fees.

Depreciation and amortization increased \$433,215 or 50% due mainly to ASI and MSR (approximately \$332,000 and \$19,000, respectively). The balance, or approximately \$82,000, resulted from the amortization of intangible costs arising from the ASI and MSR acquisitions.

Interest expense increased a net of \$154,820. There was an increase of approximately \$334,000 related primarily to interest on the Company's debentures which were issued in 1977 and notes issued in connection with the MSR acquisition. ASI's interest declined approximately \$151,000 because a loan of approximately \$2,000,000 was repaid toward the end of 1976. Other changes were nominal.

The provision for income taxes increased \$472,754 or 30%, over 1976. This reflects the increase in pre-tax income. The effective total state and federal tax rates as reflected in the Summary of Consolidated Operations increased to 51.3% from 49.2%.

As a result of the combined effect of the above factors, net income applicable to common stock increased \$424,874 or 32% over 1976.

Earnings per share increased 37% over 1976, resulting in part from approximately 5% fewer equivalent shares outstanding (2,509,243 shares in 1977 and 2,603,358 in 1976).

1976-1975

Revenues from professional services increased \$4,368,811 or 14%. The increase was primarily due to the effect of the Advanced Systems, Incorporated (ASI) acquisition (approximately \$4,000,000 of revenues, of which approximately \$1,000,000 related to certain rental plans the Company is in the process of de-emphasizing). See Note 1 to the Notes to the Consolidated Financial Statements. Revenues during 1976 also benefited by the contract adjustment discussed in Accounting Policies on page 14 which was approximately \$600,000, net of certain costs (\$300,000 of net income, or approximately \$.12 per share). Such contract adjustments have not previously been material and are not expected to be material in the future. Inflation principally impacts contract revenues although normally not materially.

Revenues from sales to clients in foreign countries increased to approximately \$5,000,000 in 1976 from approximately \$2,000,000 in 1975. Of these amounts approximately 50% in both years represents work being performed under contract with the United States Corps of Engineers for projects in Saudi Arabia and the contracts and payments are denominated in U.S. dollars. Approximately 80% of the remainder in 1976 represents revenue from ASI's foreign operations, principally in Western Europe.

Other income increased \$184,727 or 36% mainly due to imputed interest on receivables relating to the ASI acquisition. Substantially all of the remaining income in both years was generated by interest earned on the Company's short-term investments. Exclusive of ASI, other income declined \$98,061, reflecting a lower level of short-term investments in 1976.

Indirect costs, including selling, general and administrative expenses, increased by \$3,151,240 or 30%, \$2,428,092 of which was due to the acquisition of ASI. The most significant factor contributing to the remainder of the net increase was the additional allowance for doubtful accounts of \$1,047,000. This increase was due to revision of management's estimate of the ultimate realizability of contract billings, including revisions of approximately \$325,000 necessitated by state and local government financial difficulties. Exclusive of the effect of ASI and the provision for doubtful accounts, indirect costs declined \$324,240, or 10%.

Depreciation and amortization increased \$438,749 of which all but \$40,477 was due to the ASI acquisition. The remainder was caused by additional equipment purchases.

Of the \$359,271 increase in interest expense, \$287,931 was related to ASI. ASI incurred a significant portion of these interest costs under a credit agreement which, among other things, required interest costs at 4% over the prime rate on most of ASI's borrowings. URS paid off the indebtedness and terminated the agreement prior to the end of 1976. Interest expense, exclusive of ASI, was up due to the additional obligations detailed in Note 3 to the Consolidated Financial Statements.

Overall, total costs and expenses were up \$4,513,742 or 16% because of ASI. Exclusive of ASI, and reflecting continued improved direct cost effectiveness offset by the factors discussed above, total costs and expenses declined \$503,526 or 2%.

The provision for income taxes increased by \$284,106, or 22%, over 1975. This reflects the increase in pre-tax income. The effective total state and federal tax rates, as reflected in the Summary of Consolidated Operations, increased to 49.2% from 48.5%.

As a result of the combined effect of the above factors and the preferred dividend requirements, net income decreased 7% from 1975. Earnings per share increased 10% over 1975 due to the net reduction of 271,056 in common shares outstanding. This reduction arose from the reacquisition by the Company of its common shares.

Principal Locations

Corporate Headquarters
URS Corporation
155 Bovet Road
San Mateo, California 94402
415-574-5000
Telex 331340
Cable: URSCORP

8700 Stemmons Freeway
Dallas, Texas 75247
214-630-3500

3955 East Exposition Avenue
Denver, Colorado 80209
303-744-1861

1601 Tonne Road
Elk Grove Village, Illinois 60007
312-593-1790

9225 Ward Parkway
Kansas City, Missouri 64114
816-333-1400

136 Summit Avenue
Montvale, New Jersey 07645
201-573-1100

150 E. 42nd Street
New York, New York 10017
212-953-8600

555 Fifth Avenue
New York, New York 10017
212-682-0080

3611 North Black Canyon
Highway
Phoenix, Arizona 80015
602-266-1655

130 Jessie Street
San Francisco, California 94105
415-397-2525

The Fourth & Vine Building
Seattle, Washington 98121
206-623-6000

1701 N. Fort Myer Drive
Arlington, Virginia 22209
703-524-2277

3607 Manor Road
Austin, Texas 78723
512-926-7700

625 Delaware Avenue
Buffalo, New York 14202
716-883-5525

1164 Bishop Street, Suite 909
Honolulu, Hawaii 96813
808-533-3681

1225 Tongass Avenue
Ketchikan, Alaska 99901
907-225-6415

2765 South Highland Drive
Las Vegas, Nevada 89102
702-734-1193

3501 N. Causeway Boulevard
Metairie, Louisiana 70002
504-837-3976

North 1522 Washington
Spokane, Washington 99201
509-326-6650

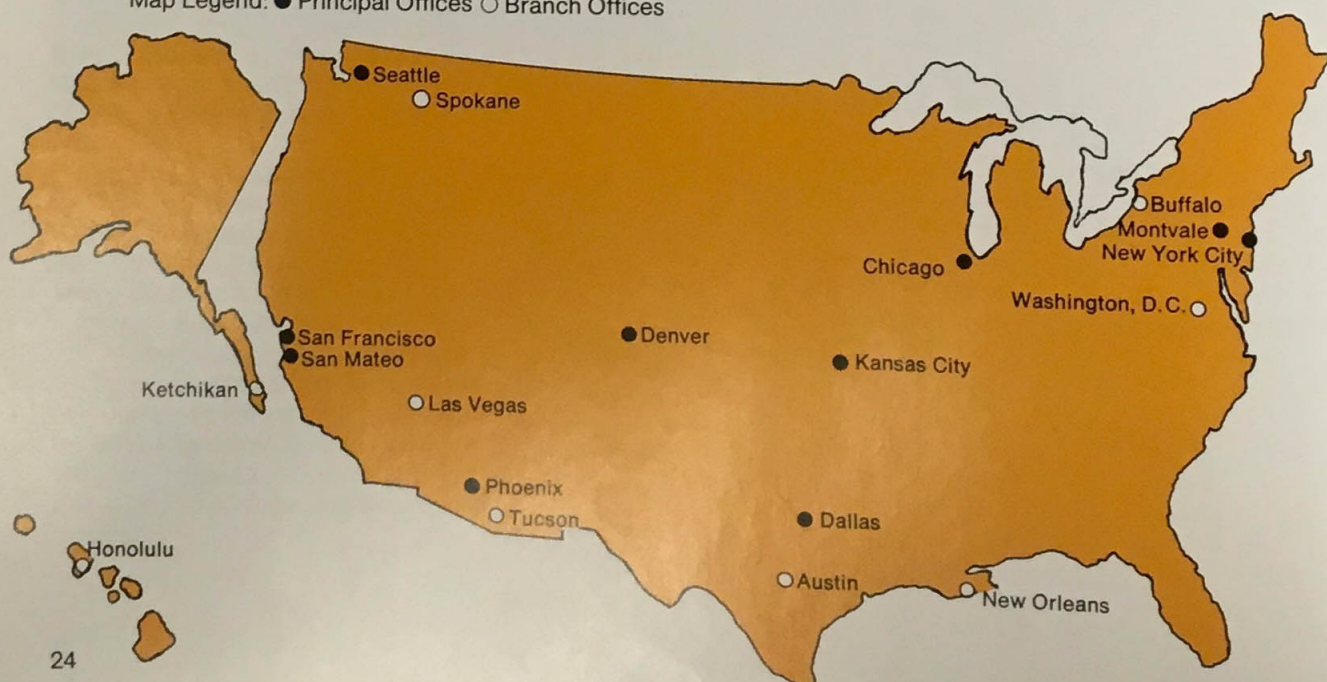
1854 South Alvernon Way
Tucson, Arizona 85711
602-747-3332

Josef-Gockeln Strasse 8
4000 Düsseldorf
West Germany
211-434-842

#1 Knightsbridge Green
London, S.W.1
England
011-44-1-584-8662

101 Richmond Street W.
Toronto, Ontario
Canada M5H 1T1
416-363-2011

Map Legend: ● Principal Offices ○ Branch Offices



Directors

Ken T. Bement
Richard C. Blum
John A. Blume
Emmet J. Cashin
H. Dewayne Kreager
Richard Q. Praeger
Edward L. Scarff
Arthur H. Stromberg
Edward Wenk, Jr.
Franklin H. Williams

Officers

Arthur H. Stromberg
President and Chief Executive Officer

Harris C. Smith
Senior Vice President

Philip C. Presber
Vice President

Howard E. Regan
Vice President, Chief Financial Officer

Franklin J. Agardy
Vice President

Shirlee Allen
Assistant Vice President/Secretary

R. Stephen Heinrichs
Treasurer

Transfer Agent/Registrar

United California Bank,
San Francisco/Los Angeles/New York

Common Stock Data	Fiscal 1977		Fiscal 1976	
	High	Low	High	Low
First Quarter	\$4.375	\$3.50	\$3.50	\$2.75
Second Quarter	4.625	3.375	4.875	3.0
Third Quarter	5.00	4.125	4.0	3.375
Fourth Quarter	4.625	4.125	4.25	3.25

URS Corporation
155 Bovet Road
San Mateo, California 94402
(415) 574-5000



W. H. McNICHOLS, JR.
Mayor

CITY AND COUNTY OF DENVER

DEPARTMENT OF FIRE

MYRLE K. WISE
CHIEF OF FIRE DEPARTMENT
745 WEST COLFAX
DENVER, COLORADO 80204

April 20, 1976

Robert C. McWhinnie
President
URS/The Ken R. White Company
3955 E. Exposition Avenue
Denver, Colorado 80209

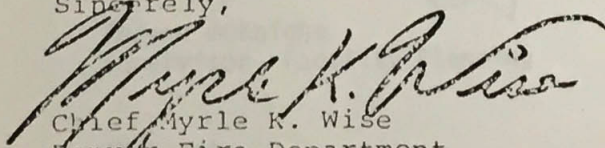
Dear Mr. McWhinnie:

I wish to extend my sincere thanks for your design of the Denver Fire Department Headquarters. As you know, this building provided the first complete administrative headquarters in the Fire Department's 100 year history, and it is fitting that this building has received the National and local notice in concert with that bestowed upon our esteemed fire department.

The Denver Fire Department Headquarters building has been featured in Fire Engineering in the August, 1975 volume. This national publication is the officially recognized journal of the fire protection profession since 1877. The Downtown Denver, Inc., annual awards dinner, held earlier this year, honored our headquarters as being both beautiful and efficient. The steady flow of compliments continues with each visitor and at each encounter with the chiefs of fire departments across the nation.

The praises and formal awards are secondary to the approval of the occupants. I assure you, Robert, the employees and I both approve and express our appreciation.

Sincerely,


Chief Myrle K. Wise
Denver Fire Department

MKW/ov

DENVER PUBLIC SCHOOLS

900 GRANT STREET / DENVER, CO 80203

JOSEPH E. BRZEINSKI, Superintendent



DIVISION OF SCHOOL AND BUSINESS SERVICES

DEPARTMENT OF FACILITY SERVICES

FACILITY PLANNING

ROBERT L. HEDLEY, Director

March 10, 1978

Mr. Robert C. McWinnie, President
URS Company
3955 East Exposition Avenue
Denver, CO 80209

Dear Mr. McWinnie:

Let me take this opportunity to call your attention to the work of Mr. Pat Cashen in your Architectural Department.

As you know, Pat is the project architect on the All-City South Stadium remodeling project and has worked very closely with the design advisory team to meet a variety of objectives identified for this project.

Pat has shown the remarkable ability to remain flexible in his thinking and receptive to different ideas and requests. This ability to interpret, cultivate and blend ideas from a number of different sources has really made a success of this project.

I personally look forward to working with Pat as this project enters the construction phase and hope that his talents will be used for future Denver Public Schools work.

Sincerely,

A handwritten signature in cursive script, reading "Thayne McKnight", is written over the typed name.

Thayne McKnight
Supervisor, Facility Planning

TMCK:get

REPRESENTATIVE GOVERNMENTAL CLIENTS

SERVICES PROVIDED

REFERENCE

CLIENT

• Department of Health, Education & Welfare Denver, Colorado (303/837-3385)	Tom Moore Regional Engineer	Quick response A/E services for re-model and rehabilitation of hospitals and health care facilities-Region VIII
• U. S. Division of Fish & Wildlife Denver, Colorado (303/234-4614)	William Godby Regional Engineer	Standard architectural design for wildlife refuse facilities & visitors centers, including solar feasibility
• U. S. Forest Service Denver, Colorado (303/234-3841)	Doug DeNio Engineering Division	Civil engineering services
• Colorado Division of Highways Denver, Colorado (303/757-9253)	Jack Kinstlinger Executive Director	Transportation planning & design; Rail Coal Train Study; Colorado State Rail Plan
• City & County of Denver Denver, Colorado (303/575-3761)	John Stamm Chief Design Engineer	A/E services on continuing contract basis.
• Denver Public Schools Denver, Colorado (303/837-1000)	Thayne McKnight Supervisor, Facilities Planning	A/E services on continuing contract basis
• National Park Service Denver, Colorado (303/234-3857)	George Gallagher Engineering Division	Civil engineering services on past continuing contract basis
• Bureau of Indian Affairs Albuquerque, New Mexico (505/766-2846)	Lowell Petersen Contracting Officer	A/E services on past continuing contract basis
• Buckley ANG Base Aurora, Colorado (303/366-5363 ext. 401)	Major C. J. Bowling Base Civil Engineer	A/E design services
• Lowry AFB Denver, Colorado (303/394-3311)	Ken Dolan Base Civil Engineer	A/E design services

URS Company Proposal for Professional Services

Dinner Most Improvement Study



OFFICE OF
SUPERINTENDENT

THE DEPARTMENT OF THE TREASURY

UNITED STATES MINT
DENVER, COLO. 80204

May 25, 1979

Mr. Dave Gess
Director, Construction and Management Division
Bldg. 41
General Services Administration
Denver Federal Center
Denver, CO 80225

Dear Mr. Gess:

The Department of the Treasury, Bureau of the Mint requests the services of the General Services Administration for the design and construction of an expansion and remodeling of the existing United States Mint at Denver, Colorado.

The project budget is estimated to be a total of \$5,895,300.00. The funding will be available from appropriations and will be transferred to GSA according to a prearranged schedule. The funding will permit phased construction and procurement prior to and after completion of the design documents. The funds will be available for (a) award of design contracts, (b) award of construction contracts, (c) award of equipment contracts, (d) GSA management costs in the design and construction phases, (e) and A/E post design services during the construction and equipment phases.

The project schedule requires that the Architectural-Engineering services commence no later than January 1, 1980 and final construction and remodeling work is completed by Sept. 30, 1984.

The project is to include:

1. Expansion of the south dock. (\$360,000).

The south dock will be expanded to cover the entire south end of the existing building and the proposed building addition. Included are a dock cover, dock lighting, scrap storage bins under the dock with associated conveying systems, a filter tank for the annealing process to be installed under the dock with associated piping, and two (2) dock levelers. Also included are relocation of a gasoline storage tank and pump and removal of part of an existing Butler warehouse,

2. Construction of a building addition for the blanking operation (\$1,600,000)

A one-story (with partial basement) building addition, approximately 7000 sq. ft., will be constructed at the southwest corner of the existing building. Included are modification of the existing sewer system, HVAC system, lighting, electrical, plant air distribution, and overhead crane, coil handling and storage systems, blank conveyor system, scrap conveyor system,, and a coil upender and weighing device.

3. Remodeling of the existing annealing area (\$570,000)

The existing annealing area will be remodeled for automated handling of process material. Included are necessary building structural modifications, HVAC system, storage facilities for blanks, conveyor systems for blanks, and electrical.

4. One-cent upsetting operation (\$360,000)

The existing basement area below annealing will be remodeled to provide facilities for the one-cent upsetting operation. Included are modifications to the building, HVAC system, blank storage containers, blank conveying systems and blank weighing systems.

5. Upsetting operation for subsidiary coin (\$260,000)

The existing second floor press room will be modified to provide a facility suitable for the upsetting of all coin except the one-cent piece. Included are necessary building alterations, storage containers for the blanks, modifications to existing bridge crane, HVAC system, and conveying systems for the blanks.

6. South press room remodeling (\$1,180,000)

The existing south press room for coining operations will be remodeled to automate the handling of process material. Included are necessary building alterations, modifications to existing bridge cranes, HVAC system, lighting modifications,

conveying systems to transport blanks to the coining presses, conveying systems to transport stamped coin from the presses and storage containers for blanks and coin.

7. Main press room remodeling (\$855,000)

The existing main press room for coining operations will be remodeled to automate the handling of process material. Included are necessary modifications to the building, HVAC system, conveying systems for transporting the blanks to the presses, conveying systems for transporting coin from the presses, and storage containers for blanks and coin.

8. Packaging facility for subsidiary coin (\$60,000)

The existing packaging area will be remodeled to automate the conveying of coin to the process. Included are necessary building alterations, storage containers for the coin, and coin conveying systems.

9. Packaging and storage facility for one cent coin (\$150,000)

An existing area in the building will be remodeled to provide facilities for the packaging of one cent coin. Included are necessary building alterations, storage containers for the coin, a weighing device for the coin, and a coin conveying system.

10. Staging and storage facility (\$320,000)

A building addition will be constructed to incorporate a Butler warehouse and adjacent building into the main structure to provide improved facilities for the short term storage of packaged coin and for the shipping of coin. Included are building construction and alterations, HVAC system, electrical and lighting, dock modifications, two additional dock levelers, and a scissors lift.

11. Expansion of the visitor's gallery (\$180,000)

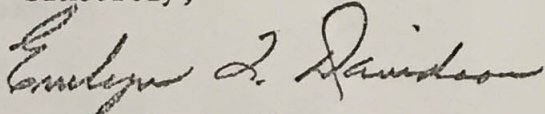
The visitors gallery will be extended to the south end of the building. Included are necessary building alterations, construction of an elevated walkway, HVAC system, electrical and lighting, and a communication system.

The above briefly describes the Denver Mint Improvement Project and sub-projects in which the services of GSA are to

be involved. The Project includes additional work which will not involve GSA services and therefore is not described above.

If you have further questions on the Project please contact Duane Sjaardema (303) 837-4508. It is urgent that this request be processed as quickly as possible. We look forward to working with you on this Project.

Sincerely,

A handwritten signature in cursive script, reading "Evelyn T. Davidson". The signature is written in dark ink and is positioned above the printed name and title.

Evelyn T. Davidson
Superintendent

DATE: MAR 12 1979

memorandum
RECEIVEDREPLY TO
ATTN OF: M-PO

SUBJECT: Trip Report - Denver Mint/SFAO (2/25 - 3/2/79)

MAR 15 1979

TO: George G. Ambrose

OFFICE OF
SUPERINTENDENT
U. S. MINT AT DENVER

Subject trip report concerned the Mint Improvement/Expansion Study - further analyses and initiation of planning.

Denver Mint (2/26 - 2/27)

1. Discussions were held with Treasury Department representatives Bob Howard and Dan Opitz concerning the Denver Mint Improvement Study. Participants from the Denver Mint were Mrs. Davidson, D. Sjaardema, A. Vaitaitis, and R. Newman. Mr. Howard and Mr. Opitz were provided with an overview of the improvement study, tour of the production operations, and tour of the Rocky Mountain Arsenal.
2. Concurrent with discussions, Mr. Opitz was provided FY 1978 Denver Mint cost information for each production operation. It is planned to correlate the quantities and unit costs with the same factors furnished by the Philadelphia Mint in the development of a linear program similar to the one prepared by the Research Triangle Institute during CY 1975. Coin shipping costs and quantities shipped during 1978 will be furnished to Mr. Opitz by this office, as required.
3. Mr. Howard, an IE, is making an independent evaluation of the improvement study alternatives at the request of Mr. John Garmat. He was provided with additional information, not included in the study, as determined necessary. Mrs. Davidson said the Rocky Mountain Arsenal alternative could be affected by the plans of the city to expand the Denver Airport onto present Arsenal property.
4. The forthcoming bid alternatives - (1) bronze strip and (2) one-cent cut blanks were discussed with Mrs. Davidson, D. Sjaardema, A. Vaitaitis, and accounting personnel (estimated costs of in-house blanks attached). Possible changes in planning for the blanking addition (in the event blanks are purchased) were discussed. It was agreed that additional storage and handling capabilities would be required for purchased blanks.

cc: Sjaardema
Washington
A. Vaitaitis



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

5. Also discussed with Mrs. Davidson, D. Sjaardema, and A. Vaitaitis the need for a determination of the particular items of construction and equipment installation which properly should be handled by GSA, remainder by the Mint. They will prepare a list, discuss with GSA, and finalize with a written agreement so that there is no doubt as to responsibility. GSA costs are to be determined - also time scheduling, and whether they can start work prior the availability of funding in FY 1979.
6. Also discussed the development of criteria for design of modifications in the main press room, tram building, and other areas within the Mint - such that a consulting engineering contract can be awarded starting in FY 1979. This will be independent of the GSA managed construction and equipment installation. I asked for a simple bar chart plotting FY 1980 planning, construction, equipment installation, and equipment relocation (both Mint and GSA).

San Francisco Assay Office (2/28 - 3/1)

1. Discussed the SFAO improvement study with Nancy Pannos, Dewey Lee, Tom Miller, Dick Voss, and Bland Brockenborough. We reviewed the cost factors which make it desirable for them to produce from cut blanks from the Denver Mint (or purchased cut blanks). They stressed that their operations are adversely affected by two factors - (1) the late ordering periods for the proof and uncirculating sets and (2) the question whether the three additional programs (bulk, proof \$1, uncirculated \$1) are still a consideration for future planning.
2. Walked through the flow of materials with Dewey Lee. Changes planned to restrict flow of materials to the first floor level will be very beneficial. The planned widening of the truck access for loading/unloading should have priority in design. Also, the upset mills scheduled for procurement are necessary due to the age of the existing mills and productivity of the new mills.
3. Discussed the cost estimates with Nancy Pannos and Dewey Lee. I told them that we essentially agree with all changes planned for the SFAO; however, the modifications indicated for the South San Francisco warehouse require further consideration from the numismatic standpoint.
4. SFAO personnel question the restriction of Denver Mint or purchased one-cent blanks to cut only. A test sample of blanks cut, annealed, and cleaned during June 1978 was analyzed. The blanks were bright and had a Rockwell hardness of 52.

5. I asked Dewey Lee for a bar chart plotting FY 1980 planning, construction, equipment installation, and equipment relocation.

(signed) G. D. Dawson

Galen D. Dawson
Chief, Operations
Division

cc: SBHackel
E Davidson
B Brockenborough
GDDawson

U.S. Mint, Denver, Colo.

ESTIMATED VALUE OF 14 GRT BLANKS
AS OF 12/31/78

CUT FERTOUND

1. FABRICATION COST ON STRIP (FROM CONTRACT TM79-1004, OLIN METALS)	\$ <u>.1578</u>
2. FABRICATION COST VALUE OF BLANKS @ 73.59% YIELD	\$.2144
BLANKING COST, FACTORY LEVEL ⁽¹⁾	<u>.0245</u>
SUB-TOTAL	\$.2387
ADMINISTRATIVE COST EQUALS ABOUT 15% OF TOTAL APPROPRIATED COST (OR AN INCREASE OF 18% OF FACTORY LEVEL BLANKING COST)	<u>.0044</u>
TOTAL EST. COST PER POUND	<u>\$.2433</u>

(1) FACTORY LEVEL COST INCLUDES MECHANICAL DIVISION SERVICES FOR BLANKING, MATERIALS HANDLING, DEPRECIATION AS WELL AS DIRECT LABOR, FACTORY OVERHEAD AND ASSAY COSTS.

UNITED STATES GOVERNMENT

Memorandum

TO : Al Vaitaitis
Chairman, Denver Mint Improvement Study

FROM : William H. Darlington, Supt.,
Coining Division

SUBJECT: 1985 Staffing Projections - Coining Division

DATE: Nov 20, 1978

The attached staffing projection for the Coining Division is designed to meet the various 1985 production goals. It is based on the following assumptions:

1. No small standard presses will be used for stamping.
2. 22 new Bliss presses (or equivalent) will be available plus our present 53 Quads.
3. Five day, three shift per day operation.
4. 72 tanks of blanks per day, includes 12 tanks of cent blanks to S.F.A.O. where applicable.
5. Five blanking presses required for all cent production plus three for other denominations. This is cutting it short. Four will probably be required.
6. Mint personnel will haul blanks from RMA to Denver Mint. Two shift operation requiring two trucks and trailers.



COINING DIVISION STAFFING 1985 PROJECTION
OPTIONS

	1	2	2A	3	3A
ALTERNATIVES	Relocate all Blanking to West.	Cent Blanking at RMA - Rest at West Bldg.	Cent Blanking at RMA plus Annealing Rest Blanking and Annealing at Denver.	All Blanking at RMA.	All Blanking plus part Cent Annealing at RMA.
A. 7.5 M/D 1¢ Cut Blanks to S.F.A.O.	190 Employees	208 Employees	217 Employees	208 Employees	217 Employees
B. 7.5 M/D 1¢ Cut & Annealed Blanks to S.F.	193 Employees	211	217	211	217
C. Denver Stamps 7.5 M/D. Additional Finished 1¢.	205	223	229	223	229

DENVER MINT IMPROVEMENT STUDY - COINING DIVISION STAFFING
OPTION

11/16/78

FUNCTION	1 - a	1 - b	1 - c	2-a	2 - b	2-c	2A-a	2A-b	2A-c	3-a	3-b	3-c	3A-a	3A-b	3A-c	
OFFICE	7	7	7	8	8	8	8	8	8	8	8	8	8	8	8	
MATERIALS HANDLING DENVER RMA	13	13	13	8	8	8	8	8	8	8	8	8	8	8	8	
	--	--	--	18	18	18	18	18	18	22	22	22	22	22	22	
BLANKING DENVER RMA	20	20	20	12	12	12	12	12	12	2	2	2	2	2	2	
	--	--	--	12	12	12	12	12	12	18	18	18	18	18	18	
ANNEALING DENVER RMA	12	15	15	12	15	15	12	12	12	12	15	15	12	12	12	
	--	--	--	--	--	--	9	9	9	--	--	--	9	9	9	
UPSETTING	14	14	17	14	14	17	14	14	17	14	14	17	14	14	17	
COIN PRESS	73	73	76	73	73	76	73	73	76	73	73	76	73	73	76	
COUNT & REVIEW	51	51	57	51	51	57	51	51	57	51	51	57	51	51	57	
TOTAL	190	193	205	208	211	223	217	217	229	208	211	223	217	217	229	

COINING DIVISION STAFFING - 1985 IMPROVEMENT PLAN

OPTION 1-a Relocate all Blanking to West Building, (includes 1.8 B cut cent blanks for SFA0).

OFFICE -

Superintendent, GS-14	-----	1
Production Coordinators, GS-11	-----	3
Administrative Assistant, GS-7	-----	1
Clerk - Typist, GS-4	-----	1
Time/Attendance Clerk, GS-4	-----	1
		7

MATERIALS / HANDLING - Assume check weighing (net) all coils at upender, 80 coils per day, 2 conveyor storage lines, 115,000 lbs. scrap = 33 Boxes per day plus 12 tanks to S.F. Transport sub. annealed blanks to Upsetting and sub. blanks to presses.

DAY	Foreman, WS-04	-----	1
	F.L. Leader, WL-05	-----	1
	Fork Lift Operator, WG-05	-----	7
SWING	Fork Lift Operator, WG-05	-----	2
GY	Fork Lift Operator, WG-05	-----	2
			13

BLANKING - Nine punches (5Cents - 4 Others)

DAY	Blanking Foreman, WS-05	-----	1
	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	4
	Melter (Sweeps), WG-09	-----	2
SWING	Blanking Foreman, WS-03	-----	1
	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	4
GY	Blanking Foreman, WS-03	-----	1
	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	4

ANNEALING - Assume 3 large plus 1 small furnace with 1 large standby. Consider eventually 5 large furnaces.

DAY	Foreman, WS-08	-----	1
	Annealing Leader, WL-08	-----	1
	Annealer, WG-08	-----	2
SWING	Foreman, WS-06	-----	1
	Annealer, WG-08	-----	3
GY	Foreman, WS-06	-----	1
	Annealer, WG-08	-----	3
	Bag Room Operator, WG-03	-----	1
SWING	Foreman, WS-06	-----	1
	C & H Leader, WL-05	-----	12
	Scale Operator, WG-05	-----	1
	Machine Operator, WG-05	-----	10
	Inspector, WG-02	-----	2
	Foreman, WS-04	-----	1
<u>UPSETTING</u>			
DAY	Upsetting Foreman, WS-05	-----	1
	Upsetting Operator, WG-05	-----	4
SWING	Upsetting Foreman, WS-03	-----	1
	Upsetting Operator, WG-05	-----	4
GY	Upsetting Foreman, WS-03	-----	1
	Upsetting Operator, WG-05	-----	3
<u>OPTION 1-a TOTAL</u>			<u>14</u>

COIN PRESS BRANCH - Assume 31.5 M/D, No standard presses, 6 presses per operator, Pressroom is general labor pool.

DAY	Foreman, WS-08	-----	1
	Foreman, WS-06	-----	1
	Die Setter Leader, WL-08	-----	1
	Die Setter, WG-08	-----	6
	Press Operator, WG-05	-----	13
	Press Operator, (Overhead), WG-05	-----	3
	Vault Attendant, WG-04	-----	1
SWING	Foreman, WS-08	-----	1
	Foreman, WS-06	-----	1
	Die Setter Leader, WL-08	-----	1
	Die Setter, WG-08	-----	6
	Press Operator, WG-05	-----	13
	Press Operator, (Overhead), WG-05	-----	3
GY	Foreman, WS-08	-----	1
	Foreman, WS-06	-----	1
	Die Setter Leader, WL-08	-----	1
	Die Setter, WG-08	-----	5
	Press Operator, WG-05	-----	11
	Press Operator, (Overhead), WG-05	-----	3

73

COUNTING & REVIEWING - Assume Counting in one area, reviewing in the other.

DAY	Foreman, WS-06	-----	1
	Leader, Medal Proc., WL-05	-----	1
	C & R Leader, WL-05	-----	1
	Scale Operator, WG-05	-----	1
	Machine Operator, WG-05	-----	11
	Inspectors, WG-02	-----	2
SWING	Bag Room Leader, WL-03	-----	1
	Bag Room Operator, WG-03	-----	4
	Foreman, WS-04	-----	1
	C & R Leader, WL-05	-----	1
	Scale Operator, WG-05	-----	1
	Machine Operator, WG-05	-----	10
GY	Inspector, WG-02	-----	2
	Foreman, WS-04	-----	1
	C & R Leader, WL-05	-----	1
	Scale Operator, WG-05	-----	1
	Machine Operator, WG-05	-----	9
	Inspector, WG-02	-----	2

51

OPTION 1-a TOTAL

190

ANNEALING -

DAY	Foreman, WS-04	-----	1
	Assistant Leader, WL-05	-----	1
	Assistant, WG-05	-----	2
SWING	Foreman, WS-04	-----	1
	Assistant, WL-05	-----	1
GY	Foreman, WS-04	-----	1
	Assistant, WG-05	-----	2

UPSETTING -

Same as 1-a
Total Employees

19

1985 IMPROVEMENT PLAN CONT.

OPTION 1-b Relocate all Blanking to West Building, including 1.8 B/yr cut and annealed cent blanks to S.F.A.O.

OFFICE -

Same as 1-a
Total Employees

----- 7

MATERIAL HANDLING -

Same as 1-a
Total Employees

----- 13

BLANKING -

Same as 1-a
Total Employees

----- 20

ANNEALING -

DAY Foreman, WS-08
Anneal Leader, WL-08
Annealer, WG-08
SWING Foreman, WS-06
Annealer, WG-08
GY Foreman, WS-06
Annealer, WG-08

----- 1
----- 1
----- 3
----- 1
----- 4
----- 1
----- 4

SWING Foreman, WS-03
Upsetting Operator, WG-05
GY Foreman, WS-03
Upsetting Operator, WG-05

----- 15

UPSETTING -

Same as 1-a
Total Employees

----- 14

COIN PRESS BRANCH -

Same as 1-a
Total Employees

----- 73

COUNTING & REVIEWING -

Same as 1-a
Total Employees
OPTION 1-b TOTAL

----- 51
----- 193

1985 IMPROVEMENT PLAN CONT.

OPTION 1-c Denver stamps additional 7.5 M/D finished cent coin @ total of 39.025 M/D.

OFFICE -

Same as 1-a
Total Employees ----- 7

MATERIALS HANDLING -

Same as 1-a
Total Employees ----- 13

BLANKING -

Same as 1-a
Total Employees ----- 20

ANNEALING -

Same as 1-b
Total Employees ----- 15

UPSETTING -

DAY	Upsetting Foreman, WS-05	----- 1	
	Upsetting Operator, WG-05	----- 5	
SWING	Foreman, WS-03	----- 1	
	Upsetting Operator, WG-05	----- 5	
GY	Foreman, WS-03	----- 1	
	Upsetting Operator, WG-05	----- 4	

17

PRESSROOM -

DAY	Same as 1-a	----- 26	2
SWING	Same as 1-a	----- 25	2
GY	Foreman, WS-08	----- 1	2
	Foreman, WS-06	----- 1	
	Die Setter Leader, WL-08	----- 1	
	Die Setter, WG-08	----- 6	
	Press Operator, WG-05	----- 13	
	Press Operator, (Overhead), WG-05	----- 3	

76

COUNTING & REVIEWING -

Add 6 Operators to 1-a Total

----- 57

OPTION 1-c TOTAL

----- 205

OPTION 1 -

Add Asst. Superintendent, GS-13
to 1-a Total

----- 8

OPTIONAL WORKING

OPTION 1 -

SWR Foreman, WS-04
Fork Lift Leader, WS-05
Fork Lift Operator, WS-05
SWR Fork Lift Operator, WS-05
SW Fork Lift Operator, WS-05

----- 1
----- 1
----- 1
----- 1
----- 1

----- 5

SWA - (Blank Trucking)

SWY Fork Lift Operator, WS-05
Driver, WS-05
SWMG Fork Lift Operator, WS-05
Driver, WS-05

----- 1
----- 1
----- 1
----- 1

----- 5

(Coll. Operator and Scrap Shipment)
SWY Foreman, WS-04
Scale Operator, WS-05
Fork Lift Operator, WS-05
Fork Lift Operator, WS-05 (D.H.)
Clark/Typist, WS-03
SWMG Fork Lift Leader, WS-05
Fork Lift Operator, WS-05
SW Fork Lift Operator, WS-05 (D.H.)

----- 1
----- 1
----- 1
----- 2
----- 1
----- 1
----- 1
----- 2

----- 26

SLAYERS - Four punches at Denver, 5 punches at SWA.

OPTION 1-c TOTAL

SWR Foreman, WS-04

----- 1

1985 IMPROVEMENT PLAN CONT.

OPTION 2-a Relocate cent Blanking to RMA, all other operations at Denver Mint, includes 7.5 M/D cut cent blanks to S.F.A.O. ,

OFFICE -

Add Asst. Superintendent, GS-13
to 1-a Total

----- 8

MATERIALS HANDLING -

DENVER -

DAY Foreman, WS-04
Fork Lift Leader, WL-05
Fork Lift Operator, WG-05
SWING Fork Lift Operator, WG-05
GY Fork Lift Operator, WG-05

----- 1
----- 1
----- 4
----- 1
----- 1

----- 8

RMA - (Blank Trucking)

DAY Fork Lift Operator, WG-05
Driver, WG-07
SWING Fork Lift Operator, WG-05
Driver, WG-07

----- 2
----- 1
----- 1
----- 1

----- 5

(Coil Receipt and Scrap Shipment)

DAY Foreman, WS-04
Scale Operator, WG-05
Fork Lift Operator, WG-05
Fork Lift Operator, WG-05 (O.H.)
Clerk/Typist, GS-3
SWING Fork Lift Leader, WL-05
Fork Lift Operator, WG-05
GY Fork Lift Operator, WG-05 (O.H.)

----- 1
----- 1
----- 4
----- 2
----- 1
----- 1
----- 1
----- 2

----- 26

BLANKING - Four punches at Denver, 5 punches at RMA.

DENVER OPERATIONS

DAY Foreman, WS-05
Blanking Operator, WG-05
Melter Sweeps, WG-09

----- 1
----- 3
----- 2

BLANKING, DENVER OPERATIONS CONT.

SWING	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	2
GY	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	2

RMA OPERATIONS

DAY	Foreman, WS-05	-----	1
	Blanking Leader, WL-05	-----	1
	Blanking Operator, WG-05	-----	2
SWING	Same (except Foreman is lower grade)	-----	4
GY	Same (except Foreman is lower grade)	-----	4

MATERIALS HANDLING -

24

DENVER OPERATIONS - Same as 2-a

ANNEALING -

OPERATIONS -

Same as 1-a	-----	12
-------------	-------	----

Blank Trucking - Same as 2-a

Coil and Scrap Handling - Same as 2-a

UPSETTING -

26

Same as 1-a	-----	14
-------------	-------	----

BLANKING - 4 machines at Denver, 5 at RMA

COIN PRESS BRANCH -

OPERATIONS - Same as 2-a

Same as 1-a	-----	73
-------------	-------	----

RMA OPERATIONS - Same as 2-a

24

COUNT & REVIEW -

Same as 1-a	-----	51
-------------	-------	----

OPTION 2-a TOTAL

208

Same as 1-a

UPSETTING -

OPERATIONS -

Same as 1-a

COIN PRESS BRANCH -

OPERATIONS -

Same as 1-a

COUNT & REVIEW -

OPERATIONS -

Same as 1-a

1985 IMPROVEMENT PLAN CONT.

OPTION 2-b Relocate Cent Blanking to RMA, all other Blanking at Denver. Stamp
7.5 M/D cut and annealed blanks (Cents) to S.F.A.O.

OFFICE -

Same as 2-a

----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a

----- 8

RMA OPERATIONS -

Blank Trucking - Same as 2-a

----- 5

Coil and Scrap Handling - Same as 2-a

----- 13

26

BLANKING - 4 punches at Denver, 5 at RMA

DENVER OPERATIONS - Same as 2-a

----- 12

RMA OPERATIONS - Same as 2-a

----- 12

24

ANNEALING -

Same as 1-a

----- 15

UPSETTING -

Same as 1-a

----- 14

COIN PRESS BRANCH -

Same as 1-a

----- 73

COUNT & REVIEW -

Same as 1-a

----- 51

TOTAL 2-b OPTION

----- 211

1985 IMPROVEMENT PLAN CONT.

OPTION 2-c Relocate Cent Blanking to RMA, all other blanking at Denver. Stamp additional 7/5 M/D cents for total of 39.025 M Coins 7/5 M/D out blanks to S.F.A.O. and encased blanks to Denver.

OFFICE -

Same as 2-a ----- 8

MATERIALS HANDLING -

Same as 2-a ----- 26

BLANKING -

Same as 2-a ----- 24

ANNEALING -

Same as 1-b and Scrap Handling - ----- 15

UPSETTING -

Same as 1-c ----- 17

COIN PRESS BRANCH -

Same as 1-c ----- 76

COUNT & REVIEW -

Same as 1-c ----- 57

TOTAL 2-c OPTIONS

----- 223

DAY Foreman, WS-08
Annular Leader, WS-08
Annular, WS-08
WING Foreman, WS-08
Annular, WS-08
OF Foreman, WS-08
Annular, WS-08

Sup

2

4

3

3

6

3

1985 IMPROVEMENT PLAN CONT.

OPTION 2A-a Cent Blanking at RMA, all other blanking at Denver. One large and small furnace at RMA for Cent Annealing. Ship 7.5 M/D cut blanks to S.F.A.O. and annealed blanks to Denver.

SWING Foreman, WS-06

Annealer, WS-08

OFFICE - Foreman, WS-06

Annealer, WS-08

Same as 2-a

MATERIALS HANDLING -

UPSETTING -

DENVER OPERATIONS - Same as 2-a

Same as 1-a

RMA OPERATIONS -

COIL (Blank trucking)

DAY Fork Lift Operator, WG-05

Driver

SWING Fork Lift Operator, WG-05

Driver

COIL (Coil Receipt and Scrap Handling -

Same as 2-a)

Same as 1-a

OPTION 2A-a TOTAL

BLANKING - 5 Punches at RMA, 4 Punches at Denver

DENVER OPERATIONS - Same as 2-a

RMA OPERATIONS - Same as 2-a

ANNEALING -

DENVER OPERATIONS

DAY Foreman, WS-08

Annealer Leader, WL-08

Annealer, WG-08

SWING Foreman, WS-06

Annealer, WG-08

GY Foreman, WS-06

Annealer, WG-08

ANNEALING CONT. (RMA OPERATIONS)

RMA OPERATIONS 1985 IMPROVEMENT PLAN CONT.

DAY	Foreman, WS-06	all other blanking at Denver, Co.	-----	1
	Annealer, WG-08	for Cent Annealing, Ship 2/3 of stock annealed	-----	2
SWING	Foreman, WS-06	and cont blanks to Denver.	-----	1
	Annealer, WG-08		-----	2
GY	Foreman, WS-06		-----	1
	Annealer, WG-08		-----	2
				9

UPSETTING - HANDLING -

DENVER	Same as 1-a	Same as 2-a	-----	14
RMA OPERATIONS -	Same as 2-a		-----	18
COIN PRESS BRANCH -				
BLANKS	Same as 1-a		-----	73
DENVER OPERATIONS -	Same as 2-a		-----	12
COUNT & REVIEW -			-----	12
RMA OPERATIONS -	Same as 2-a		-----	51
	Same as 1-a		-----	24
OPTION 2A-a TOTAL				
				217

DENVER OPERATIONS -	Same as 2-a	-----	12
RMA OPERATIONS -	Same as 2-a	-----	9

UPSETTING -

	Same as 1-a	-----	16
COIN PRESS BRANCH -			
	Same as 1-a	-----	73

COUNT & REVIEW -

	Same as 1-a	-----	51
--	-------------	-------	----

1985 IMPROVEMENT PLAN CONT.

OPTION 2A-b Cent Blanking at RMA, all other blanking at Denver, One large and small furnace at RMA for Cent Annealing, Ship 7/5 M/D cut and annealed cent blanks to S.F.A.O. and cent blanks to Denver.

OFFICE -

Same as 2-a ----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a ----- 8

RMA OPERATIONS - Same as 2-a ----- 18

BLANKING -

DENVER OPERATIONS - Same as 2-a ----- 12

RMA OPERATIONS - Same as 2-a ----- 12

24

ANNEALING -

DENVER OPERATIONS - Same as 2A-a ----- 12

RMA OPERATIONS - Same as 2A-a ----- 9

UPSETTING -

Same as 1-a ----- 14

COIN PRESS BRANCH -

Same as 1-a ----- 73

COUNT & REVIEW -

Same as 1-a ----- 51

OPTION 2A-b TOTAL

217

1985 IMPROVEMENT PLAN CONT.

OPTION 2A-c All Cent Blanking at RMA, all other blanking at Denver, One large and small furnace for cent annealing at RMA, produce additional 7.5 M/D finished cents at Denver.

OFFICE -

Same as 2-a

----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a

----- 8

RMA OPERATIONS - Same as 2-a

----- 18

2

BLANKING -

DENVER OPERATIONS - Same as 2-a

----- 12

RMA OPERATIONS - Same as 2-a

----- 12

4

ANNEALING -

DENVER OPERATIONS - Same as 2A-a

----- 12

RMA OPERATIONS - Same as 2A-a

----- 9

6

UPSETTING -

Same as 1-c

----- 17

3

COIN PRESS BRANCH -

Same as 1-c

----- 76

6

COUNT AND REVIEW -

Same as 1-c

----- 57

3

OPTION 2A-c TOTAL

----- 229

1985 IMPROVEMENT PLAN CONT.

OPTION 3-a All Blanking at RMA, 7.5 M/D cut cent blanks to S.F.A.O.

OFFICE -

Same as 2-a

MATERIALS HANDLING -

DENVER OPERATIONS -

DAY	Foreman, WS-03	-----	1
	Fork Lift Operator, WG-05	-----	3
SWING	Foreman, WS-03	-----	1
	Fork Lift Operator, WG-05	-----	2
GY	Fork Lift Operator, WG-05	-----	1
			8

RMA OPERATIONS -

(Blank Trucking) - Same as 2-a		-----	5
(Coil Receipt and Scrap Handling)			
DAY	Foreman, WS-04	-----	1
	Scale Operator, WG-05	-----	1
	Fork Lift Operator, WG-05	-----	4
	Fork Lift Operator, (O.H.), WG-05	-----	2
	Clerk/Typist, GS-3	-----	1
SWING	Foreman, WS-04	-----	1
	Scale Operator, WG-05	-----	1
	Fork Lift Operator, WG-05	-----	4
GY	Fork Lift Operator, WG-05 w/ 1 O.H.	-----	2
			22

BLANKING - 9 Punches at RMA

DAY	Foreman, WS-05	-----	1
	Blanking Press Operator, WG-05	-----	5
	Melter, Sweeps (Denver Operation)	-----	2
SWING	Foreman, WS-03	-----	1
	Operator, WG-05	-----	5
GY	Foreman, WS-03	-----	1
	Operator, WG-05	-----	5
			20

ANNEALING - All at Denver

Same as 1-a

----- 12

UPSETTING -

Same as 1-a IMPROVEMENT PLAN CONT. ----- 14

COIN PRESS BRANCH -

Same as 1-a with the exception of Area ----- 73

COUNT & REVIEW -

Same as 1-a ----- 51

OPTION 3-a TOTAL

208

OFFICE -

Same as 2-a ----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a ----- 8

OMA OPERATIONS - Same as 3-a ----- 22

BLANKING -

OMA OPERATIONS - Same as 3-a ----- 20

ANNEALING -

DENVER OPERATIONS - Same as 1-b ----- 15

OMA OPERATIONS - Non-existent ----- 0

UPSETTING -

Same as 1-a ----- 17

COIN PRESS BRANCH -

Same as 1-a ----- 75

COUNT & REVIEW

1985 IMPROVEMENT PLAN CONT.

OPTION 3-b All Blanking at RMA 7.5 M/D cut and annealed cent blanks to S.F.A.O.

Staffing same as Option 3-a with the exception of Annealing Staff as 1-b.

OPTION 3-b TOTAL ----- 211

MATERIALS HANDLING -

OPTION 3-c All blanking at RMA, Denver produces additional 7.5 M/D finished cent coins.

RMA OPERATIONS - Same as 3-a ----- 22

OFFICE -

BLANKING -

Same as 2-a ----- 8

Same as 3-a ----- 20

MATERIALS HANDLING -

ANNEALING -

DENVER OPERATIONS - Same as 2-a ----- 8 1

DENVER OPERATIONS - Same as 2A-a ----- 12

RMA OPERATIONS - Same as 3-a ----- 22 2

RMA OPERATIONS - Same as 2A-a ----- 9

BLANKING -

UPSETTING -

RMA OPERATIONS - Same as 3-a ----- 20 2

Same as 1-a ----- 10

ANNEALING -

DENVER OPERATIONS - Same as 1-b ----- 15 3

RMA OPERATIONS 1-b - Non existant ----- 0

UPSETTING -

Same as 1-c ----- 17 3

COIN PRESS BRANCH -

Same as 1-c ----- 76 6

COUNT & REVIEW -

Same as 1-c ----- 57 7

OPTION 3-c TOTAL ----- 223

1985 IMPROVEMENT PLAN CONT.

OPTION 3A-a All Blanking at RMA, One large and one small furnace at RMA for annealing cents, 7.5 M/D cut cent blanks to S.F.A.O.

OFFICE -

Same as 2-a ----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a ----- 8

RMA OPERATIONS - Same as 3-a ----- 22

BLANKING -

Same as 3-a ----- 20

ANNEALING -

DENVER OPERATIONS - Same as 2A-a ----- 12

RMA OPERATIONS - Same as 2A-a ----- 9

UPSETTING

UPSETTING - as 1-a ----- 14

Same as 1-a ----- 14

COIN PRESS BRANCH -

COIN PRESS BRANCH - ----- 73

Same as 1-a ----- 73

COUNT & REVIEW -

COUNT & REVIEW - ----- 51

Same as 1-a ----- 51

OPTION 3A-a TOTAL

OPTION 3A-a TOTAL ----- 217

1985 IMPROVEMENT PLAN CONT.

OPTION 3A-b All blanking at RMA, One large and small furnace at RMA for annealing cents, 7.5 M/D cut and annealed blanks (cent) to S.F.A.O.

OFFICE -

Same as 2-a

----- 8

MATERIALS HANDLING -

DENVER OPERATIONS - Same as 2-a

----- 8

RMA OPERATIONS - Same as 3-a

----- 22

BLANKING -

Same as 3-a

----- 20

ANNEALING -

Same as 2A-a

----- 21

UPSETTING -

Same as 1-a

----- 14

COIN PRESS BRANCH -

Same as 1-a

----- 73

COUNT & REVIEW -

Same as 1-a

----- 51

OPTION 3A-b TOTAL

----- 217

FEDERAL RESERVE
COIN DIVISION

1985 IMPROVEMENT PLAN CONT.

OPTION 3A-c All Blanking at RMA, One large and small furnace at RMA for annealing cent blanks, Denver produces additional 7.5 M/D finished cent coin.

OFFICE -

Same as 2-a

MATERIALS HANDLING -

Same as 3-a

+ 2 GY 1 driven
1 fork

BLANKING -

Same as 3-a & Shipping Branch

ANNEALING -

Same as 2A-a

UPSETTING -

Same as 1-c

COIN PRESS BRANCH -

Same as 1-c

COUNT & REVIEW -

Same as 1-c

OPTION 3A-c TOTAL

10 00-09

10 00-07 20

10 00-05
9 total

10 00-00 21

10 00-07

10 00-00 17

10 00-00
9 total

10 00-00 76

10 00-00

10 00-00 57

10 00-00
17 total

229

231

10 00-00

10 00-00

10 00-00

PROJECTED/STAFFING
CASH DIVISION

	1982	1983	1984	1985
Direct Labor	7	9	10	11
Supervision	2	3	3	4
Office	5	5	5	5
Total	14	17	18	20

1982

Direct Labor - Warehousemen Fork Lift Operators	1@ GS--09
Supervision - Foreman, Coin Rec. & Shipping Branch	1@ GS - 07
Asst. Foreman " " " " " "	1@ GS - 05
	9 total
 OFFICE	
Head Cash Div.	1@ GS - 09
Transportation Specialist	1@ GS - 07
ACCTS. Clerk	1@ GS - 05
Shipping Clerk	2@ GS - 05
	5 total

1983

Direct Labor - Warehouseman Fork lift Operator	9@ WG -05
Lead Man	1@ WG - 06
Supervisor - Foreman	1@ WS-05
Asst. Foreman	1@ WS - 03
	12 Total
 OFFICE: Same	

1984

Direct Labor - Warehouseman Fork Lift Operators	10@ WG - 05
Lead Man	1@ WG - 06
Supervisor Foreman	1@ WS - 05
Asst. Foreman	1@ WS - 03
	13 total
 OFFICE: Same	

1985

Direct Labor - Warehousemen Fork Lift Operator

11@ WG - 05

Lead Man

1@ WG - 06

Supervisor - Foreman

1@ WS - 05

Ast. Foreman

2@ WS - 05

15 total

OFFICE: Same

alt 1

92-FY 1979

94-FY 1981

alt 2

108

CURRENT

(F.Y. 1978)

STAFFING PLAN

BUILDING & MECHANICAL DIV.

alt 3

105

		SHIFTS			Total
		1st	2nd	3rd	
<u>OFFICE</u>					
Superintendent, Building & Mechanical Division	GS-14	1			1
Assistant Superintendent, Bldg. & Mech. Div.	GS-12	1			1
Clerk Stenographer	GS-05	1			1
Time & Attendance Clerk	GS-05	1			1
Totals		4	0	0	4
<u>ENGINEERING & PLANNING BRANCH</u>					
Mechanical Engineer	GS-12	1			1
Electrical Engineer	GS-12	1			1
Engineering Technician	GS-09	1			1
Totals		3	0	0	3
<u>SCALE SHOP SECTION</u>					
Scale Mechanic	WG-13	2	0	0	2
Totals		2	0	0	2
<u>MACHINE SHOP BRANCH</u>					
Foreman, Machine Shop Branch	WS-11	1			1
Asst. Foreman, Machine Shop Branch	WS-09	1	1		2
Toolmaker	WG-11	1	2		3
Machinist	WG-10	11	4	2	17
Industrial Equipment Mechanic	WG-10	3	3		6
Totals		17	10	2	29
<u>METAL WORKING BRANCH</u>					
Foreman, Metal Working Branch	WS-09	1			1
Maintenance Mechanic	WG-10	6			6
Totals		7	0	0	7

		<u>SHIFTS</u>			<u>Total</u>
		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	
<u>BUILDING MAINTENANCE BRANCH</u>					
Foreman, Building Maintenance Branch	WS-09	1			1
Maintenance Man	WG-10	5			5
Maintenance Man	WG-08	1			1
	Totals	<u>7</u>	<u>0</u>	<u>0</u>	<u>7</u>
<u>ELECTRICAL SHOP BRANCH</u>					
Foreman, Electric Shop Branch	WS-11	1			1
Asst. Foreman, Electric Shop Branch	WS-09		1		1
Industrial Electronics Mechanic	WG-11	3	2	1	6
Electrician-Equipment Repairer	WG-10	2	1		3
Industrial Truck Mechanic	WG-10	1			1
	Totals	<u>7</u>	<u>4</u>	<u>1</u>	<u>12</u>
<u>POWER PLANT BRANCH</u>					
Foreman, Power Plant Branch	WS-09	1			1
Boiler Plant Operator	WG-10	1	2	2	5
	Totals	<u>2</u>	<u>2</u>	<u>2</u>	<u>6</u>
<u>CUSTODIAL BRANCH</u>					
Foreman, Custodial Branch	WS-03	1			1
Asst. Foreman, Custodial Branch	WS-01		1		1
Forklift Operator	WG-04	1	1	1	3
Janitor	WG-02	5	1	1	7
	Totals	<u>7</u>	<u>3</u>	<u>2</u>	<u>12</u>
<u>PREVENTIVE MAINTENANCE BRANCH</u>					
Preventive Maintenance Branch Foreman	WS-09	1			1
Preventive Maintenance Worker	WG-08	2			2
	Totals	<u>3</u>	<u>0</u>	<u>0</u>	<u>3</u>
TOTAL FOR DIVISION		59	15	7	85

CY '79 - 90 ceiling
CY '81 - 92 ceiling

85
'79-'81
92

STAFFING CHANGES
BUILDING & MECHANICAL DIVISION
ALTERNATIVE 1

SHIFTS

<u>OFFICE</u>		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>TOTAL</u>
Assistant Superintendent, Building & Mechanical Division	GS-12	-1	+1	0	0
Totals		-1	+1	0	0

ENGINEERING & PLANNING BRANCH

Supervisory Engineer GS-13 +1⁷⁹ +1

Note: Additional Mechanical Engineer should be included if not included in
Coining Div. Staffing Plan

Totals	+1	0	0	+1
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SCALE SHOP SECTION

no change

MACHINE SHOP BRANCH

Asst. Foreman, Machine Shop Branch	WS-09	-1		+1	0
Industrial Equipment Mechanic	WG-10			+2 ⁸¹	+2
Totals		-1	0	+3	+2

METAL WORKING BRANCH

Maintenance Mechanic	WG-10	-1	+1 ⁷⁹	+1 ⁸¹	+1
Totals		-1	+1	+1	+1

BUILDING MAINTENANCE BRANCH

No change

ELECTRICAL SHOP BRANCH

Industrial Electronics Mechanic	WG-11	-1	-1		-2
Electrician - Equipment Repairer	WG-10	+2	+2	+1	+5
Totals		+1	+1	+1	+3 ⁷⁹

POWER PLANT BRANCH

No change

		<u>SHIFTS</u>			<u>TOTAL</u>
<u>CUSTODIAL BRANCH</u>		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	
Asst. Foreman, Custodial Branch	WS-01		-1		-1
Janitor	WG-02		+3		+3
Totals		<u>0</u>	<u>+2</u>	<u>0</u>	<u>+2</u> '79
<u>PREVENTIVE MAINTENANCE BRANCH</u>					
Electrician	WG-09	+1 ^{'79}			+1
Oiler	WG-06	+1 ^{'82}			+1
Totals		<u>+2</u>	<u>0</u>	<u>0</u>	<u>+2</u>
TOTAL STAFFING CHANGE FOR ALTERNATIVE 1					
From Current		+1	+5	+5	+11
Totals for Division for Alternative 1		60	20	12	92

STAFFING CHANGES
BUILDING & MECHANICAL DIVISION
ALTERNATIVES 2 AND 2A

All branches will be staffed per Alternative 1 with the following additions:

		<u>SHIFTS</u>			<u>Total</u>
		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	
<u>RMA MAINTENANCE BRANCH</u>					
Custodial Forklift Operator	WG-04	1			1
Machinist	WG-10	1			1
Industrial Equipment Mechanic	WG-10	1	1	1	3
Electrician - Equipment Repairer	WG-10	$\frac{1}{4}$	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{3}{8}$
Totals		64	22	14	100
TOTAL FOR DIVISION FOR ALTERNATIVES 2 and 2A		64	22	14	100

Messenger WG-05

1

TOTAL FOR DIVISION

For Alternatives 2 and 2A

64

22

14

100

STAFFING CHANGES
BUILDING & MECHANICAL DIVISION
ALTERNATIVES 3 AND 3A

All branches will be staffed per Alternatives 2 and 2A with the following changes:

		<u>SHIFTS</u>			
		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Total</u>
<u>MACHINE SHOP BRANCH</u>					
Industrial Equipment					
Mechanic	WG-10			-1	-1
	Totals	<u>0</u>	<u>0</u>	<u>-1</u>	<u>-1</u>
<u>RMA MAINTENANCE BRANCH</u>					
Custodial Forklift					
Operator	WG-04		+1		
Industrial Equipment					
Mechanic	WG-10		+1		
Electrician - Equipment					
Repairer	WG-10			+1	
	Totals	<u>0</u>	<u>+2</u>	<u>+1</u>	<u>+3</u>
NET CHANGES FOR DIVISION		0	+2	0	+2
TOTAL FOR DIVISION					
for Alternatives 3 and 3A		64	24	14	102

Messenger WG-5 1

memorandum

DATE: November 2, 1978

REPLY TO
ATTN OF: Head Cash Division
Ray WellsSUBJECT: Staffing Plan for 1985, Cash Division Administrative Staff and Shipping
Section.

TO: Albert Vaitaitis

1. The 1985 plans for the increased production allow for three shipping docks on the west side of the building and one shipping dock at Bldg.362, Rocky Mountain Arsenal. Following is our estimate of the generated increase in Personnel.

Mint

Foreman, Coin Rec. & Shipping Branch	1ea	WS-05
Ass't Foreman, Coin Rec. & Shipping Branch	2ea	WS-03
Warehousemen Fork Lift Operators	8ea	WG-05
Shipping Clerk	1ea	GS-05

Rocky Mountain Arsenal Bldg #362

Ass't Foreman	1ea	WS-03
Lead Man	1ea	WG-06
Warehousemen Fork Lift Operators	2ea	WG-05
Shipping Clerk	1ea	GS-04



Buy U.S. Savings Bonds Regularly on the Payroll Savings Plan

U. S. MINT
DENVER, COLORADO

STAFFING PLAN

JUNE 30, 1978

COINING DIVISION

			<u>SHIFTS</u>			<u>APPROVED</u>
		<u>1st</u>	<u>2nd</u>	<u>3rd</u>		<u>TOTAL</u>
<u>COINING DIVISION OFFICE</u>						
Superintendent	GS-14	1				1
Assistant Superintendent	GS-13	1				1
(Incumbency only)						
Coin Production Supervisor	GS-11	1	1	1		3
Administrative Assistant	GS-07	1				1
Time & Attendance Clerk	GS-04	1				1
Clerk - Typist	GS-04	1				1
	TOTALS	6	1	1		8

COIN BLANKING BRANCH

Coin Press Foreman	WS-05	1				1
Coin Press Foreman	WS-03		1			1
Coin Press Leader	WL-05	1				1
Coin Press Operator	WG-05	6	6			12
Melter (Sweeps)	WG-09	2				2
	TOTALS	10	7	0		17

U. S. MINT
DENVER, COLORADO

STAFFING PLAN

JUNE 30, 1978

COINING DIVISION, CONT'D

		<u>SHIFTS</u>			<u>Approved</u>
	<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>Total</u>	
<u>COUNTING & REVIEWING BRANCH</u>					
Coin Counting Machine Foreman	WS-06 1				1
Coin Counting Machine Foreman	WS-04	1	1		2
Coin Counting Machine Leader	WL-05 1				1
Fabric Worker Leader	WL-03 1				1
Coin Scales Operator	WG-05 1	1	1		3
Coin Counting Machine Operator	WG-05 13	11	6		30
TOTALS	17	13	8		38
<u>PROCESS WEIGH BRANCH</u>					
Fork Lift Foreman	WS-05 1				1
Fork Lift Foreman	WS-03	1			1
Fork Lift Leader	WL-05 1		1		2
Fork Lift Operator	WG-05 3	3	3		9
TOTALS	5	4	4		13
<u>UPSETTING BRANCH</u>					
Upsetting Equipment Foreman	WS-05 1				1
Upsetting Equipment Foreman	WS-03	1			1
Upsetting Equipment Operator	WG-05 4	3	2		9
TOTALS	5	4	2		11

U. S. MINT
DENVER, COLORADO

STAFFING PLAN

JUNE 30, 1978

COINING DIVISION, CONT'D

		<u>SHIFTS</u>			<u>APPROVED</u>
		<u>1st</u>	<u>2nd</u>	<u>3rd</u>	<u>TOTAL</u>
<u>ANNEALING BRANCH</u>					
Annealer Foreman	WS-08 1				1
Annealer Foreman	WS-06		1	1	2
Annealer Leader	WL-08 1				1
Annealer	WG-08 4		4	3	11
	TOTALS 6	5	4		15
<u>COIN PRESS BRANCH</u>					
Coin Press Foreman	WS-08 1	1	1		3
Coin Press Foreman	WS-06 2	2	1		5
Coinage Die Setter	WG-08 6	6	4		16
Coin Press Operator	WG-05 22	22	11		55
Coin Press Die & Parts Attendant	WG-04 1				1
	TOTALS 32	31	17		80
<u>MATERIALS HANDLING BRANCH</u>					
Fork Lift Foreman	WS-04 1				1
Fork Lift Leader	WL-05 1				1
Fork Lift Operator	WG-05 3				3
	TOTALS 5				5
TOTALS FOR DIVISION	87	64	36		187

FORKLIFT TRUCKS

Denver Mint has

5 propane-powered lift trucks
2 gasoline-powered lift trucks
49 electric lift trucks

The cost of maintenance for electric trucks for fiscal year 1977 was:

labor	\$35,537.64
materials	20,858.78
	<u>\$56,396.32</u>

The maintenance labor cost (direct, no benefits), using an average cost of \$8.50/hr., represents 4,180 man-hours, which equals to approximately 2.15 full-time employees.

Nineteen (19) forklift operators, four (4) leaders and four (4) foreman are employed. The approximate annual expense for salaries amount to \$398,440.

On the average, three trucks have to be purchased each year to replace the trucks that wear out. This cost is approximately \$50,000/year.

To summarize:

New trucks	\$ 50,000
Operation	398,440
Maintenance	<u>56,400</u>
Total annual cost	<u>\$504,840</u>

The breakdown by functions of the cost of operation is as follows:

Material Handling

1 foreman, 1 leader, 3 operators	\$ 76,023
----------------------------------	-----------

Process Weigh

2 foremen, 2 leaders, 9 operators	\$ 192,481
-----------------------------------	------------

Cash Division

1 foreman, 1 leader, 7 operators	\$ 129,936
Total	<u>\$ 398,440</u>

The above total cost does not include the maintenance of the seven (7) internal combustion (propane and gasoline) trucks, since the Accounting system does not have a separate account for this effort.

In addition to the total cost, the extensive use of forklift trucks create a variety of other problems such as:

Safety - the aisles are narrow and not straight. There is always a danger to human life, although we never have had a serious accident.

Damage to Equipment - there are numerous "accidents", usually not reported, involving the damage of doorways, walls, coining presses, electrical panels, and just about every kind of equipment.

Damage to Floors - sections of floor have to be refinished every year during Settlement and sometimes during the weekends.

Congestion - space is the most important problem in the Mint, and the trucks, mobile or at standstill, use space. We are running out of space in the battery charging area on the third floor also.

Housekeeping - the trucks travel throughout the whole building on all floors, pick up dirt in dirty areas and distribute it everywhere.

One other problem is the inability for us to purchase trucks that could serve us best (Allis-Chalmers brand is our favorite), due to procurement regulations. As a result, we have, for example, ten (10) different brands of electric trucks, creating mainly a problem for maintenance. While the maintenance cost is not prohibitive at all, there are times that it takes up to 3 months to obtain a part, which hurts the production.

U.S. MINT, DENVER, COLO.

ESTIMATED VALUE OF 1¢ CUT BLANKS
AS OF 12/31/78COST PER POUND

1. FABRICATION COST ON STRIP (FROM CONTRACT TM 79-1004, OLIN METALS)	\$ <u>.1578</u>
2. FABRICATION COST VALUE OF BLANKS @ 73.59% YIELD	\$.2144
BLANKING COST, FACTORY LEVEL ⁽¹⁾	<u>.0245</u>
SUB-TOTAL	\$.2389
ADMINISTRATIVE COST EQUALS ABOUT 15% OF TOTAL APPROPRIATED COST (OR AN INCREASE OF 18% OF FACTORY LEVEL BLANKING COST)	<u>.0044</u>
TOTAL EST. COST PER POUND	\$ <u>.2433</u>

(1) FACTORY LEVEL COST INCLUDES MECHANICAL DIVISION
SERVICES FOR BLANKING, MATERIALS HANDLING, DEPRECIATION
AS WELL AS DIRECT LABOR, FACTORY OVERHEAD AND ASSAY
COSTS.

TABLE 11

ESTIMATED EQUIPMENT REQUIREMENTS FOR 1985
(Denver 1¢ blanking requirement based on 15" strip, carbide dies)
Includes additional 7.5M cents daily (SFAO share)

Revised 8/10/78

EQUIPMENT TYPE	AVERAGE DAILY PRODUCTION REQUIREMENT							TOTAL EQUIPMENT	
	1¢ (SFAO) 7,500,000	1¢ (DENV) 21,375,000	5¢ 2,567,000	10¢ 3,483,000	25¢ 3,300,000	50¢ 550,000	\$1.00 250,000	REQ'D	ON HAND
BLANKING Bliss HP2-100 Bliss HP2-45	1.25	3.57	.78	.70	1.32	.33	.23	8.18	8 2
ANNEALING 4000 lbs/hr line 2000 lbs/hr line	.57	1.62	.50	.22	.58	.19	.18	3.86	4* 2
UPSETTING Auto-Feed Hand-Feed	1.02	2.91	.57	.70	1.00	.37	.30	6.2 .67	8 1
STAMPING Bliss 6K-200 & 225 100-ton Columbia 100-ton Standard	12.95	36.91	9.87	6.02	10.68	4.0	1.82	55.89 10.68 15.69	42 11 24
COUNTING Stand Abbott Electronic	2.17	4.98 1.0	.89	1.16	1.96	.76	.42	12.34 1.0	11 1

* three (3) on-line, 1 spare (not installed)

DENVER MINT IMPROVEMENT STUDY

- 1.0 Define the Problem prepare over-all plan of action, and submit report to the office of Production by 3/24/78
- 1.1 List Perceived General Problem Areas
- 2.0 List General Potential Solutions
- 2.1 List various Alternatives
- 3.0 Limiting Factors
- 3.1 List general parameters
- 4.0 List and Identify Action Items
- 5.0 Initiate, Assign, and Schedule Actions
- 6.0 Identify Specific Problems
- 7.0 Investigative Actions and Conclusions
- 8.0 Investigation Action Assignments

Revised April 21, 1978

1.0 The Problem

The Denver Mint must improve material flow, materials handling procedures, and the general work environment and must be capable of meeting 1985 projected production requirements.

1.1 Perceived General Problem Areas.

- 1.1.1 Excessive noise levels.
- 1.1.2 Overcrowded conditions (office, maintenance, & production areas)
- 1.1.3 Unbalanced and inadequate ventilation.
- 1.1.4 Structure is overloaded or loaded to limit.
- 1.1.5 Excessive energy usage and energy waste.
- 1.1.6 Excessive effort required for material handling.
- 1.1.7 Excessive floor damage and maintenance costs.
- 1.1.8 Double handling of process materials.
- 1.1.9 Cross-flows of process materials.
- 1.1.10 OSHA standards not being met.
- 1.1.11 Electrical deficiencies.
- 1.1.12 Wasted space.
- 1.1.13 High temperatures in summer, cold areas in winter.
- 1.1.14 Security and Fire Protection systems need improvement.

2.0 General Potential Solutions.

2.1 Alternatives.

- 2.1.1 Use existing building and process layouts making minor changes to correct deficiencies.
- 2.1.2 Use existing building and site but start with "empty shell" approach and establish optimum use of existing facilities.
- 2.1.3 Use existing building and site and move some production processes to south Butler building.
- 2.1.4 Use existing building and site and move some production processes to two south Butler buildings.
- 2.1.5 Use existing building and site. Raze two south Butler buildings and build one new structure on site of Butler buildings.
- 2.1.6 Use existing building and site but extend building to include south roof area beyond existing Metal Working/Preventive Maintenance shop.
- 2.1.7 Use existing building and site but extend dock area along entire south side of building and add new enclosed structure at ground level on 1st floor level from west dock south, to provide additional space for production operations.
- 2.1.8 Any combination of 1 thru 7 above.
- 2.1.9 Use existing building and site but move some production processes to off-site government facility.

3.0 Criteria, Restrictions, Conditions

3.1 The general parameters to be considered are:

3.1.1 Satisfy OSHA requirements:

Environment (sound, pollution, safety, etc.)

1 Electrical

3.1.2 Plan to satisfy projected coin production needs through 1985 for Western Sector. Annual SFAO capability is 1,800 million cents with Denver - supplied blanks @250,000 lbs/week.

3.1.3 If Denver (within existing buildings) cannot meet the required demand, SFAO to take-up to 1,800 million cents/year first, before any Denver on or off-site expansion can be considered.

3.1.4 Production capability to be based on 3 shift - 8 hr. - 5 day operation.

3.1.5 5¢ - \$1.00 coins must be produced on existing property.

3.1.6 Off-site production, if required, limited to any or some combination of following:

3.1.6.1 Blanking of cents

3.1.6.2 Annealing of cent blanks

3.1.6.3 Riddling of cent blanks

3.1.6.4 Upsetting of cent blanks

3.1.6.5 Stamping of cents

3.1.6.6 Post-stamp riddling of cents

3.1.6.7 Storing cents

3.1.6.8 Shipping cents

3.1.6.9 Blanking of all other blanks

3.1.6.10 Annealing of all other blanks

3.1.6.11 Post-anneal riddling of all other blanks

3.1.7 Bulk shipment of a portion of 1-cent coins to FRB's in the future is a likelihood.

Use below - projected production needs:

3.1.8.1

MILLION PIECES (Annually)

<u>FY</u>	<u>1¢*</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	4200	361	528	440	53	36	5618
1980	4620	396	572	484	57	42	6171
1981	5040	433	616	528	66	45	6728
1982	5460	475	664	581	97	48	7325
1983	5922	519	717	638	119	54	7960
1984	6426	568	774	704	132	60	8664
1985	6930	616	836	792	132	60	9366

* Includes SFAO 1.8 billion /coins/ year with Denver supplied blanks when Denver capacity within existing building is exceeded.

3.1.8.2

MILLION PIECES DAILY (24 HRS)

<u>FY</u>	<u>1¢*</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	17.5	1.5	2.2	1.83	.22	.15	23.4
1980	19.25	1.65	2.38	2.0	.24	.175	25.7
1981	21.0	1.8	2.57	2.2	.275	.19	28.03
1982	22.75	1.98	2.77	2.42	.40	.2	30.52
1983	24.67	2.16	2.99	2.66	.46	.225	33.16
1984	26.775	2.37	3.225	2.93	.55	.25	36.1
1985	28.875	2.57	3.48	3.3	.55	.25	39.03

3.1.9 Off-site expansion on assumed or available government facility must be one of the alternatives to be considered (without any expansion of present space), and compared to on-site expansion.

- 4.0 Action Items
 - 4.1 List Machine production capacities.
 - 4.2 Make "as-Built" layouts of site and floor plans.
 - 4.3 Make layout drawings showing ventilation equipment and air flow volumes.
 - 4.3.1 Measure air flow volumes.
 - 4.4 Determine and list optimum equipment spacing requirements and arrangements.
 - 4.4.1 Blanking equipment
 - 4.4.2 Annealing equipment
 - 4.4.3 Coining equipment
 - 4.4.3.1 Bliss quad presses
 - 4.4.3.2 Columbia presses
 - 4.4.3.3 Conventional presses
 - 4.4.4 Riddling equipment
 - 4.4.5 Upset mills
 - 4.4.6 Counting & Bagging equipment
 - 4.4.7 Maintenance Shops and equipment
 - 4.4.8 Make optimum layout sketches for above.
 - 4.5 Make drawings showing existing production equipment layout and coin storage and shipping facilities.
 - 4.6 Review office layouts and identify deficiencies.
 - 4.6.1 Review organizational structure.
 - 4.7 Review visitors tour routes and identify proposed changes.
 - 4.8 Identify floor load limits on layout drawings.
 - 4.9 Identify energy losses on layout drawings.
 - 4.9.1 Measure energy losses.
 - 4.10 Identify on dwgs material flow and the existing material handling methods.
 - 4.11 List and identify OSHA non-compliance.
 - 4.12 List and identify electrical deficiencies (specific locations)

- 4.13 List and identify air, steam, and water piping deficiencies (specific locations).
- 4.14 Identify areas of double handling of materials. (list and/or show on flow diagrams).
- 4.15 Identify areas of cross-flows of material (list and/or show on flow diagrams).
- 4.16 List and show on floor plan and/or site layouts areas of "wasted" space.
- 4.17 Identify and show on drawings areas where temperatures are uncomfortable; winter; summer.
- 4.18 Identify and List on layout drawings all noise levels.
- 4.18.1 Measure noise levels and record parameters used.
- 4.18.2 Investigate materials and methods for noise treatment of manufacturing space.
- 4.19 Conduct Survey Requesting Input from 1st Line Supervisors.
- 4.20 Identify Security and Fire Protection problems.
- 4.21 Visit Winnipeg Mint and Philadelphia Mint for Ideas.
- 4.22 Identify impact of palletized coin shipping on existing storage and shipping facilities.

5.0 Action Items Assigned

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
4.1	Summers, Lord	4/14
4.2	Vaitaitis	4/21
4.3	Neal, Morgan	5/19
4.3.1	Neal, Morgan	5/5
4.4.1 through 4.4.8	Vaitaitis & activity supervisor	6/9
4.5	Summers, Lord	5/5
4.5.1	Vaitaitis	5/26
4.6	Div. Heads	4/28
4.6.1	Div. Heads	4/28
4.7	Div. Heads	4/14
4.8	Neal	5/5
4.9	Neal	5/26
4.9.1	Neal, Morgan	5/19
4.10	Summers, Lord	5/19
4.11	Vaitaitis, Safety Officer, Billapando	6/2
4.12	Vaitaitis, Miller	4/28
4.13	Gose	4/28
4.14	Vaitaitis	5/19
4.15	Vaitaitis	5/19
4.16	Vaitaitis	5/12
4.17	Billapando	5/26
4.18	Billapando	6/9
4.18.1	Lord, Billapando	5/31
4.18.2		6/23
4.19	Vaitaitis	4/22
4.20	Vaitaitis, Reavey, Barwinski	5/19
4.21	Vaitaitis	4/7
4.22	Langhorn	4/21

* Includes coordination of required drafting.

6.0 Specific Problems.

- 6.1 Punch Press Noise Levels exceed 85dBa
- 6.2 Coin Press Noise Levels exceed 85dBa.
- 6.3 Riddler Noise Levels exceed 85dBa.
- 6.4 Annealing area - CO levels often exceed 50ppm.
- 6.5 Annealing area-summer temperatures often exceed 110° F.
- 6.6 South Production Area (1st Floor) - area is cold in winter when south dock door remains open.
- 6.7 General cluttered, drab appearance throughout Mint.
- 6.8 Floors are continually damaged from dropped tanks and truck wheels.
- 6.9 Oil, grease and dirt tracked into office areas.
- 6.10 Employees track in snow, mud and grit through front entrance.

- 7.0 Investigative Actions.
- 7.1 Enclose a punch press to evaluate noise reduction.
- 7.2 Evaluate methods of reducing coin press noise levels.
 - 7.2.1 Enclose feed tank/feeder bowl assembly.
 - 7.2.2 Investigate noise reduction due to feed finger assembly.
- 7.3 Investigate potential layouts of Equipment in existing facility.
 - 7.3.1 Make improved equipment layouts within existing facilities to correct deficiencies.
 - 7.3.2 Show revised process flow.
- 7.4 Evaluate existing organizational structure and project changes thru 1985.
- 7.5 Evaluate potential for automated handling of material.
- 7.6 Investigate the availability of off-site government facilities.
 - 7.6.1 Investigate availability of natural gas at off-site facilities.
 - 7.6.2 Investigate availability of sewer facilities at off-site facilities.
 - 7.6.3 Investigate availability of utilities at off-site facilities.
 - 7.6.4 Investigate availability of employee conveniences at off-site facilities.
- 7.7 Make optimum layouts of facilities.
 - 7.7.1 optimizing use of office space to meet 1985 projections.
 - 7.7.2 improving tourist routes as proposed.
 - 7.7.3 improving employee access to building.
 - 7.7.4 optimizing equipment layouts to meet OSHA standards, correct noise problems, reduce congestion, improve material flow, and utilize improved material handling techniques.

- 7.7.4.1 Revise process flow diagrams and identify on flow diagrams the proposed material handling methods.
- 7.7.4.2 Identify those operations or processes and equipment which should be relocated outside the existing Mint building.
- 7.8 Make layout drawings of proposed use of outside facilities and revise process flow diagrams.
 - 7.8.1 using one Butler building.
 - 7.8.2 using two Butler buildings.
 - 7.8.3 using new facility on site of existing Butler building.
 - 7.8.4 using new addition on west and south of Mint building.
 - 7.8.5 using 2nd floor south roof area.
 - 7.8.6 using potential off-site government facilities.
 - 7.8.7 any combination of the above.
- 7.9 Evaluate construction and preparation costs.
 - 7.9.1 to modify one Butler for production use.
 - 7.9.2 to modify two Butler buildings for production use.
 - 7.9.3 to replace Butler buildings with new facility for manufacturing operations.
 - 7.9.4 to provide addition to west and south side of Mint building.
 - 7.9.5 to enclose 2nd floor roof area for use.
 - 7.9.6 to utilize off-site government facilities.
 - 7.9.7 to utilize combinations of the above.
- 7.10 Evaluate annual operational costs, including costs of organizational staffing and security, to
 - 7.10.1 expand operations to one Bulter building.
 - 7.10.2 expand operations to two Butler buildings.

- 7.10.3 expand operations to facility on site of Butler buildings.
- 7.10.4 expand operations to west-south extension to Mint building.
- 7.10.5 expand operations to second floor south roof area.
- 7.10.6 expand operations to off-site government facilities.
- 7.10.7 expand operations per 7.8.7
- 7.11 Review all concepts in detail.
 - 7.11.1 List deficiencies of each proposal.
 - 7.11.2 List specific advantages of each proposal.
 - 7.11.3 List cost comparisons and changeover problems expected to construct and prepare outside facilities.
 - 7.11.4 Make cost comparisons of outside facilities.
- 7.12 List specific changes recommended for optimum noise reduction.
- 7.13 List specific changes recommended to optimize ventilation.
- 7.14 List specific changes to reduce energy losses.
- 7.15 Prepare final report and identify the Denver Mints' final recommendations.

S.O Investigative Action Assignments

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
7.1	Lord, Billapando	6/9
7.2.1	Sjaardema, Billapando	6/9
7.2.2	Vaitaitis	6/9
7.3	Summers, Lord	5/19
7.3.1, 7.3.2	Summers, Lord	6/9
7.4	Sjaardema	5/19
7.5	Vaitaitis, Morgan Engineers	6/9
7.6	Sjaardema	8/4
7.7.1	Division Heads	6/9
7.7.2, 7.7.3	"	6/2
7.7.4.1	Engineers	6/9
7.7.4.2.	Project Committee	6/23
7.8.1, 7.8.2	Engineers	6/23
7.8.3	"	7/14
7.8.4	"	7/21
7.8.5	"	7/28
7.8.6	"	8/11
7.8.7	"	8/18
7.9.1	Sjaardema	7/21
7.9.2	"	7/21
7.9.3	"	7/28
7.9.4	"	8/11
7.9.5	"	8/4
7.9.6	"	9/11
7.9.7	"	8/18
7.10.1	Project Committee & Cost Accounting Rep.	7/21
7.10.2, 7.10.3	"	7/21
7.10.4	"	8/1
7.10.5	"	8/4
7.10.6	"	9/1
7.10.7	"	8/18
7.11	Project Committee	9/8
7.12	"	6/23
7.13	"	7/21
7.14	"	7/21
7.15	Vaitaitis, Sjaardema	9/22

* includes coordination of required drafting

Project Committee: Lawrence
Darlington
Summers
Sjaardema
Lord
Neal
Vaitaitis

DNEVER MINT IMPROVEMENT STUDY

- 1.0 Define the Problem, prepare over-all plan of action, and submit report to the office of Production by 3/24/78
- 1.1 List Perceived General Problem Areas
- 2.0 List General Potential Solutions
- 2.1 List various Alternatives
- 3.0 Limiting Factors
- 3.1 List general parameters
- 4.0 List and Identify Action Items
- 5.0 Initiate, Assign, and Schedule Actions
- 6.0 Identify Specific Problems
- 7.0 Investigative Actions and Conclusions
- 8.0 Investigation Action Assignments

The Problem

The Denver Mint must improve material flow, materials handling procedures, and the general work environment and must be capable of meeting 1985 projected production requirements.

1.1 Perceived General Problem Areas

1.1.1 Excessive noise levels.

1.1.2 Overcrowded conditions (office, maintenance, & production areas)

1.1.3 Unbalanced and inadequate ventilation.

1.1.4 Structure is overloaded or loaded to limit.

1.1.5 Excessive energy usage and energy waste.

1.1.6 Excessive effort required for material handling.

1.1.7 Excessive floor damage and maintenance costs.

1.1.8 Double handling of process materials.

1.1.9 Cross-flows of process materials.

1.1.10 OSHA standards not being met.

1.1.11 Electrical deficiencies.

1.1.12 Wasted space

1.1.13 High temperatures in summer, cold areas in winter.

1.1.14 Security and Fire Protection systems need improvement.

2.0 General Potential Solutions.

2.1 Alternatives.

- 2.1.1 Use existing building and process layouts making minor changes to correct deficiencies.
- 2.1.2 Use existing building and site but start with "empty shell" approach and establish optimum use of existing facilities.
- 2.1.3 Use existing building and site and move some production processes to south Butler building.
- 2.1.4 Use existing building and site and move some production processes to two south Butler buildings.
- 2.1.5 Use existing building and site. Raze two south butler buildings and build one new structure on site of Butler buildings.
- 2.1.6 Use existing building and site but extend building to include south roof area beyond existing Metal Working/Preventive Maintenance shop.
- 2.1.7 Use existing building and site but extend dock area along entire south side of building and add new enclosed structure at ground level on 1st floor level from west dock south, to provide additional space for production operations.
- 2.1.8 Any combination of 1 thru 7 above.
- 2.1.9 Use existing building and site but move some production processes to off-site government facility.

3.0 Criteria, Restrictions, Conditions

3.1 The general parameters to be considered are:

3.1.1 Satisfy OSHA requirements:

Environment (sound, pollution, safety, etc.)

Electrical

3.1.2 Plan to satisfy projected coin production needs through 1985 for Western Sector. Annual SFAO capability is 1,800 million cents with Denver - supplied blanks @250,000 lbs/week.

3.1.3 If Denver (within existing property lines) cannot meet the req'd demand, SFAO to take-up up to 1,8000 million cents/year first, before any Denver off-site production can be considered.

3.1.4 Production capability to be based on 3 shift - 8 hr. - 5 day operation.

3.1.5 5¢ - \$1.00 coins must be produced on existing property.

3.1.6 Off-site production, if required, limited to any or some combination of following:

3.1.6.1 Blanking of cents

3.1.6.2 Annealing of cent blanks

3.1.6.3 Riddling of cent blanks

3.1.6.4 Upsetting of cent blanks

3.1.6.5 Stamping of cents

3.1.6.6 Post-stamp riddling of cents

3.1.6.7 Storing cents

3.1.6.8 Shipping cents

3.1.6.9 Blanking of all other blanks

3.1.6.10 Annealing of all other blanks

3.1.6.11 Post-anneal riddling of all other blanks

3.1.7 Bulk shipment of a portion of 1-cent coins to FRB's in the future is a likelihood.

Use below - projected production needs:

3.1.8.1

MILLION PIECES (Annually)

<u>FY</u>	<u>1¢</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	4200	361	528	440	53	36	5618
1980	4620	396	572	484	57	42	6171
1981	5040	433	616	528	66	45	6728
1982	5460	475	664	581	97	48	7325
1983	5922	519	717	638	119	54	7960
1984	6426	568	774	704	132	60	8664
→ 1985	6930	616	836	792	132	60	9366

3.1.8.2

MILLION PIECES DAILY (24 HRS)

<u>FY</u>	<u>1¢</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	17.5	1.5	2.2	1.83	.22	.15	23.4
1980	19.25	1.65	2.38	2.0	.24	.175	25.7
1981	21.0	1.8	2.57	2.2	.275	.19	28.03
1982	22.75	1.98	2.77	2.42	.40	.2	30.52
1983	24.67	2.16	2.99	2.66	.46	.225	33.16
1984	26.775	2.37	3.225	2.93	.55	.25	36.1
→ 1985	28.875	2.57	3.48	3.3.	.55	.25	39.03

3.1.9 Off-site production to some degree on RMA must be one of the alternatives to be considered (without any expansion of present space).

- 4.0 Action Items.
- 4.1 List Machine production capacities.
- 4.2. Make "as-Built" layouts of site and floor plans.
- 4.3 Make layout drawings showing ventilation equipment and air flow volumes.
- 4.3.1 Measure air flow volumes and show on drawings.
- 4.4 Determine and list optimum equipment spacing requirements and arrangements.
- 4.4.1 Blanking equipment
- 4.4.2 Annealing equipment
- 4.4.3 Coining equipment
- 4.4.3.1 Bliss quad presses
- 4.4.3.2 Columbia presses
- 4.4.3.3 Conventional presses
- 4.4.4 Riddling equipment
- 4.4.5 Upset mills
- 4.4.6 Counting & Bagging equipment
- 4.4.7 Maintenance Shops and equipment
- 4.4.8 Make optimum layout sketches for above.
- 4.5 Make drawings showing existing process flow patterns, surge areas, and surge area capacities.
- 4.6 Review office layouts and identify deficiencies.
- 4.6.1 Review organizational structure.
- 4.7 Review visitors tour routes and identify proposed changes.
- 4.8 Identify floor load limits on layout drawings.
- 4.9 Identify energy losses on layout drawings.
- 4.9.1 Measure energy losses.
- 4.10 Identify on flow diagrams the existing material handling methods.
- 4.11 List and identify OSHA non-compliance.
- 4.12 List and identify electrical deficiencies (specific locations)

- 4.13 List and identify air, steam, and water piping deficiencies (specific locations).
- 4.14 Identify areas of double handling of materials. (list and/or show on flow diagrams).
- 4.15 Identify areas of cross-flows of materials (list and/or show on flow diagrams).
- 4.16 List and show on floor plan and/or site layouts areas of "wasted" space.
- 4.17 Identify and show on drawings areas where temperatures are uncomfortable; winter; summer.
- 4.18 Identify and List on layout drawings all noise levels.
- 4.18.1 Measure noise levels and parameters used.
- 4.19 Conduct Survey Requesting Input from 1st Line Supervisors.
- 4.20 Identify Security and Fire Protection problems
- 4.21 Visit Winnipeg Mint and Philadelphia Mint for Ideas.

5.0 Action Items Assigned

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
4.1	Summers, Lord	4/14
4.2	Vaitaitis	4/7
4.3	Neal, Morgan	4/21
4.3.1	Neal, Morgan	4/28
4.4.1 through 4.4.7	Vaitaitis & activity supervisor	4/14
4.4.8	Vaitaitis	4/28
4.5	Summers, Lord	4/18
4.6	Div. Heads	4/28
4.6.1	Div. Heads	4/28
4.7	Div. Heads	4/14
4.8	Neal	5/5
4.9	Neal	5/12
4.9.1	Neal, Morgan	5/2
4.10	Summers, Lord	5/5
4.11	Vaitaitis, Safety Officer, Billapando	4/28
4.12	Vaitaitis, Miller	4/28
4.13	Gose	4/28
4.14	Vaitaitis	5/5
4.15	Vaitaitis	5/5
4.16	Vaitaitis	5/12
4.17	Billapando	5/5
4.18	Billapando	6/9
4.18.1	Lord, Billapando	6/9
4.19	Vaitaitis	4/22
4.20	Vaitaitis, Reuvey, Barwinski	4/28
4.21	Vaitaitis	4/7

* includes coordination of required drafting

6.0 Specific Problems.

- 6.1 Punch Press Noise Levels exceed 85dBA
- 6.2 Coin Press Noise Levels exceed 85dBA
- 6.3 Riddler Noise Levels exceed 85dBA.
- 6.4 Annealing area - CO levels often exceed 50ppm.
- 6.5 Annealing area-summer temperatures often exceed 110° F.
- 6.6 South Production Area (1st Floor) - area is cold in winter when south dock door remains open.
- 6.7 General cluttered, drab appearance throughout Mint.
- 6.8 Floors are continually damaged from dropped tanks and truck wheels.
- 6.9 Oil, grease and dirt tracked into office areas.
- 6.10 Employees track in snow, mud and grit through front entrance.

- 7.0 Investigative Actions.
- 7.1 Enclose a punch press to evaluate noise reduction.
- 7.2 Evaluate methods of reducing coin press noise levels.
 - 7.2.1 Enclose feed tank/feeder bowl assembly.
 - 7.2.2 Investigate noise reduction due to feed finger assembly.
- 7.3 Investigate potential layouts of Equipment in existing facility.
 - 7.3.1 Make improved equipment within layouts existing facilities to correct deficiencies.
 - 7.3.2 Show revised process flow.
- 7.4 Evaluate existing organizational structure and project changes thru 1985.
- 7.5 Evaluate potential for automated handling of material.
- 7.6 Investigate the availability of off-site government facilities.
 - 7.6.1 Investigate availability of natural gas at off-site facilities.
 - 7.6.2 Investigate availability of sewer facilities at off-site facilities.
 - 7.6.3 Investigate availability of utilities at off-site facilities.
 - 7.6.4 Investigate availability of employee conveniences at off-site facilities.
- 7.7 Make optimum layouts of facilities.
 - 7.7.1 optimizing use of office space to meet 1985 projections.
 - 7.7.2 improving tourist routes as proposed.
 - 7.7.3 improving employee access to building.
 - 7.7.4 optimizing equipment layouts to meet OSHA standards, correct noise problems, reduce congestion, improve material flow, and utilize improved material handling techniques.

- 7.7.4.1 Revise process flow diagrams and identify on flow diagrams the proposed material handling methods.
- 7.7.4.2. Identify those operations or processes and equipment which should be relocated outside the existing Mint building.
- 7.8 Make layout drawings of proposed use of outside facilities and revise process flow diagrams.
 - 7.8.1 using one Butler building.
 - 7.8.2 using two Butler buildings.
 - 7.8.3 using new facility on site of existing Butler building.
 - 7.8.4 using new addition on west and south of Mint building.
 - 7.8.5 using 2nd floor south roof area.
 - 7.8.6 using potential off-site government facilities.
 - 7.8.7 any combination of the above.
- 7.9 Evaluate construction and preparation costs.
 - 7.9.1 to modify one Butler for production use.
 - 7.9.2 to modify two Butler buildings for production use.
 - 7.9.3 to replace Butler buildings with new facility for manufacturing operations.
 - 7.9.4 to provide addition to west and south side of Mint building.
 - 7.9.5 to enclose 2nd floor roof area for use.
 - 7.9.6 to utilize off-site government facilities.
 - 7.9.7 to utilize combinations of the above.
- 7.10 Evaluate annual operational costs, including costs of organizational staffing and security, to
 - 7.10.1 expand operations to one Butler building.
 - 7.10.2 expand operations to two Butler buildings.

- 7.10.3 expand operations to facility on site of Butler buildings.
- 7.10.4 expand operations to west-south extension to Mint building.
- 7.10.5 expand operations to off-site government facilities.
- 7.11 Review all concepts in detail.
- 7.11.1 List deficiencies of each proposal.
- 7.11.2 List specific advantages of each proposal.
- 7.11.3 List cost comparisons and changeover problems expected to construct and prepare outside facilities.
- 7.11.4 Make cost comparisons of outside facilities.
- 7.12 List specific changes recommended for optimum noise reduction.
- 7.13 List specific changes recommended to optimize ventilation.
- 7.14 List specific changes to reduce energy losses.
- 7.15 Prepare final report and identify the Denver Mints' final recommendations.

* includes optimization of required drawings

Project Committee
Lawrence
Burlington
Sims
Sjostrom
Ladd
Armstrong
Valentine

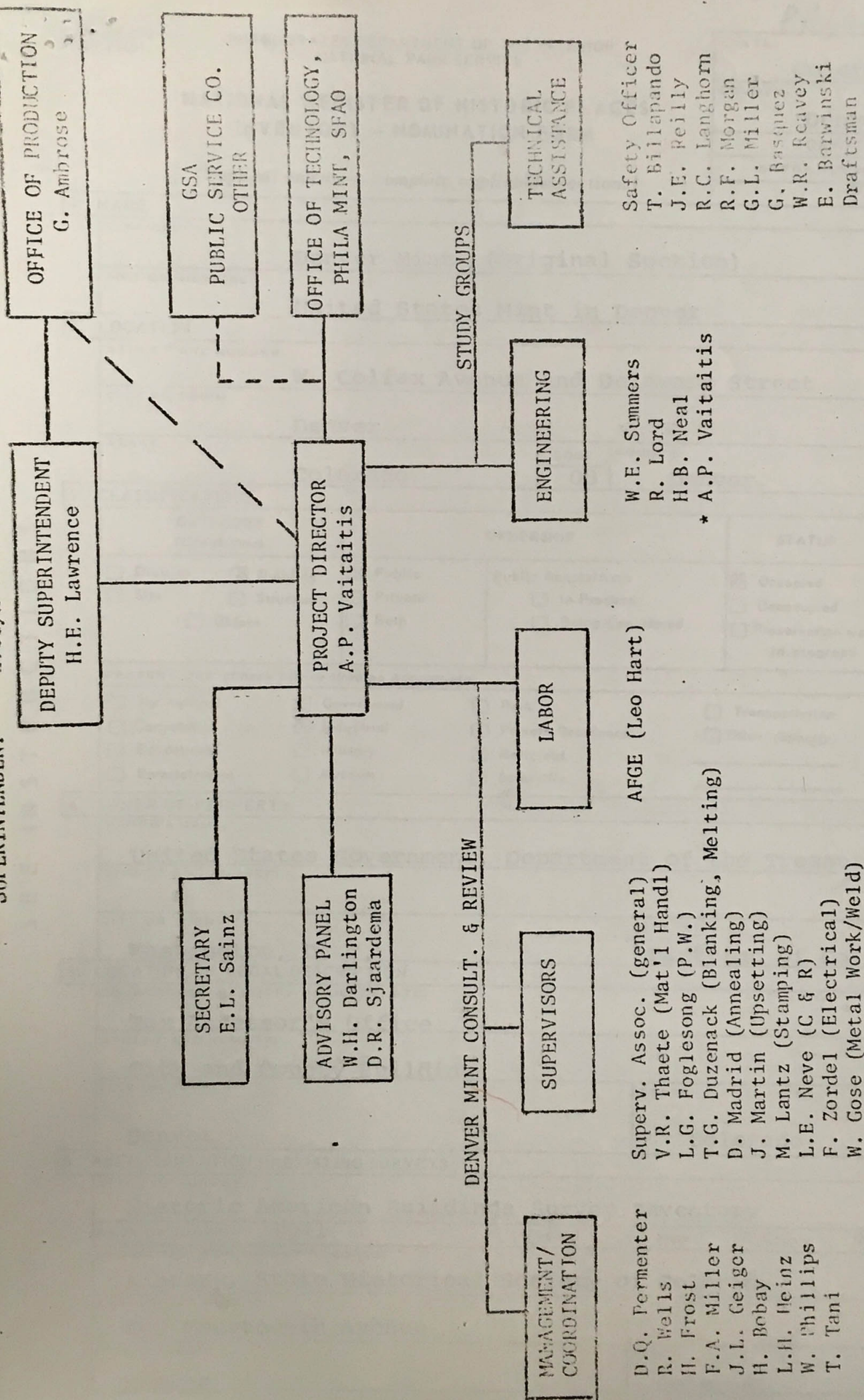
8.0 Investigative Action Assignments

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
7.1	Lord, Billapando	6/9
7.2.1	Sjaardema, Billapando	6/9
7.2.2	Vaitaitis	6/9
7.3	Summers, Lord	5/5
7.4	Sjaardema	5/19
7.5	Vaitaitis, Morgan, Engineers	7/7
7.6	Sjaardema	7/7
7.7.1 thru 7.8.4.2	Engineers, draftsman	7/7
7.9	Sjaardema	9/1
7.10	Project Committee & Cost Accounting Rep.	9/1
7.11	Project Committee	9/8
7.12	Project Committee	8/4
7.13	Project Committee	8/4
7.14	Project Committee	8/4
7.15	Vaitaitis, Sjaardema	9/22

* includes coordination of required drafting

Project Committee: Lawrence
Darlington
Summers
Sjaardema
Lord
Neal
Vaitaitis

SUPERINTENDENT - Evelyn T. Davidson



- | | | | | |
|----------------|-----------------------------------|-----------------|------------------|----------------|
| D.Q. Permenter | Superv. Assoc. (general) | AFGE (Leo Hart) | W.E. Summers | Safety Officer |
| R. Wells | V.R. Thaete (Mat'l Handl) | | R. Lord | T. Billapando |
| H. Frost | L.G. Foglesong (P.W.) | | H.B. Neal | J.E. Reilly |
| F.A. Miller | T.G. Duzenack (Blanking, Melting) | | * A.P. Vaitaitis | R.C. Langhorn |
| J.L. Geiger | D. Madrid (Annealing) | | | R.F. Morgan |
| H. Bobay | J. Martin (Upsetting) | | | G.L. Miller |
| L.H. Heinz | M. Lantz (Stamping) | | | G. Basquez |
| W. Phillips | L.E. Neve (C & R) | | | W.R. Reavey |
| T. Tani | F. Zordel (Electrical) | | | E. Barwinski |
| | W. Gose (Metal Work/Weld) | | | Draftsman |
| | W. MacKenzie (Machine Shop) | | | |
| | L. Baca (Carp. Shop) | | | |
| | P. Abeyta (Custodial) | | | |

* as required

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Type all entries - complete applicable sections)

STATE:
Colorado

COUNTY:
Denver

FOR NPS USE ONLY

ENTRY NUMBER	DATE
	FEB 1 1972

1. NAME

COMMON:

Denver Mint (Original Section)

AND/OR HISTORIC:

United States Mint in Denver

2. LOCATION

STREET AND NUMBER:

W. Colfax Avenue and Delaware Street

CITY OR TOWN:

Denver

STATE

Colorado

CODE

08

COUNTY:

Denver

CODE

031

3. CLASSIFICATION

CATEGORY (Check One)	OWNERSHIP	STATUS	ACCESSIBLE TO THE PUBLIC
☐ District ☐ Site ☐ Object	☒ Public ☐ Private ☐ Both	☒ Occupied ☐ Unoccupied ☐ Preservation work in progress	Yes: ☒ Restricted ☐ Unrestricted ☐ No
PRESENT USE (Check One or More as Appropriate)			
☐ Agricultural ☐ Commercial ☐ Educational ☐ Entertainment	☒ Government ☒ Industrial ☐ Military ☐ Museum	☐ Park ☐ Private Residence ☐ Religious ☐ Scientific	☐ Transportation ☐ Other (Specify) _____ ☐ Comments _____

4. OWNER OF PROPERTY

OWNER'S NAME:

United States Government, Department of the Treasury

STREET AND NUMBER:

CITY OR TOWN:

Washington, D. C.

STATE:

District of Columbia

CODE

11

5. LOCATION OF LEGAL DESCRIPTION

COURTHOUSE, REGISTRY OF DEEDS, ETC:

Tax Assessor's Office

STREET AND NUMBER:

City and County Building

CITY OR TOWN:

Denver

STATE

Colorado

CODE

08

6. REPRESENTATION IN EXISTING SURVEYS

TITLE OF SURVEY:

Historic American Buildings Survey Inventory

DATE OF SURVEY:

1971

☐ Federal

☐ State

☐ County

☒ Local

DEPOSITORY FOR SURVEY RECORDS:

Library, State Historical Society of Colorado

STREET AND NUMBER:

200 Fourteenth Avenue

CITY OR TOWN:

Denver

STATE

Colorado

CODE

08

SEE INSTRUCTIONS

STATE:
Colorado

COUNTY:
Denver

FOR NPS USE ONLY
ENTRY NUMBER
DATE

FEB 1 1972

7. DESCRIPTION

CONDITION	(Check One)					
	☒ Excellent	☐ Good	☐ Fair	☐ Deteriorated	☐ Ruins	☐ Unexposed
	(Check One)			(Check One)		
	☒ Altered	☐ Unaltered	☐ Moved	☒ Original Site		

DESCRIBE THE PRESENT AND ORIGINAL (if known) PHYSICAL APPEARANCE

The original section of the second Denver Mint building was constructed during the period from 1897 to 1904, in the style of the Second Renaissance Revival. Exterior ground story walls are faced with rusticated Colorado granite. Second story walls are faced with ashlar granite, providing a subtle contrast in exterior wall textures. A granite entablature marks the division between the ground and second stories.

Exterior style elements reaffirm the symmetry of the rectangular plan. High, rectangular windows, framed in marble and surmounted by marble lunettes, open at even intervals from three ground story facades. Originally, the uniform placement and size of windows was disrupted on the rear facade by two pairs of narrow rectangular windows, headed by stepped voussoirs. Later, all such architectural features on the rear facade were obliterated with the construction of a modern addition, which adjoins the original section. The marble lunettes above all ground story openings on the front facade, above two windows on the east facade and above three windows on the west facade are ornately carved in an eagle motif. Each window is accented by rusticated granite voussoirs and marble molding.

An alternate window design, of smaller dimensions, is utilized throughout the second story. Each window opening is doubled by a center marble column, which forms two minor rounded arches within the opening. The solid marble panel above each pair of double arches is decorated by a single marble disc, a motif originally duplicated on the rear facade, above each pair of narrow rectangular windows. Radiating ashlar granite voussoirs form arches above each window opening.

The second story rises to a massive granite cornice, composed of brackets and a decorated frieze. The low, truncated hip roof above is covered in red tile and barely visible from the street.

Wrought iron lamps flank the main entrance on the front facade. Smaller, less ornate lamps were added after the original construction between window arches on the ground story. Additional wrought iron features include the protective grilles at the main entrance, and at all basement and ground story windows. A wrought iron fence was attached to the low, granite retaining wall at a later date, enclosing the Mint property.

The two story Mint building houses, in addition, two basement levels, a mezzanine and a full attic.

SEE INSTRUCTIONS

B. SIGNIFICANCE

PERIOD (Check One or More as Appropriate)

☐ Pre-Columbian☐ 16th Century☐ 18th Century☒ 20th Century☐ 15th Century☐ 17th Century☒ 19th Century

SPECIFIC DATE(S) (If Applicable and Known)

1897 - present

AREAS OF SIGNIFICANCE (Check One or More as Appropriate)

Aboriginal

☐ Education☐ Political☐ Urban Planning☐ Prehistoric☐ Engineering☐ Religion/Phi-☒ Other (Specify)☐ Historic☒ Industry

osophy

history of U.S.

☐ Agriculture☐ Invention☐ Science

Mint; history of

☒ Architecture☐ Landscape☐ Sculpture

Denver

☐ Art

Architecture

☐ Social/Human-☐ Commerce☐ Literature

itarian

☐ Communications☐ Military☐ Theater☐ Conservation☐ Music☐ Transportation

STATEMENT OF SIGNIFICANCE

In February, 1861, Congress approved an act to create the Territory of Colorado. One year later, on April 21, 1862, an act was approved to establish a branch Mint at Denver, in the Territory of Colorado, exclusively for the coinage of gold. Early in 1863, the Secretary of the Treasury was authorized to purchase a private mint building, located at Sixteenth and Market Streets, to house the new branch Mint. Title to the building was obtained from the owners, Clark, Gruber & Company, in April, but due to delays in the delivery of equipment, the Mint was not opened until September, 1863.

Operations at the Denver branch Mint did not conform to the provisions established by Congress. Bullion was melted, refined, assayed, stamped and returned to depositors until 1869, when operations were further restricted to include only melting, assaying and return to depositors. Although bills were repeatedly introduced in Congress, it was not until 1895 that an act was approved to establish a United States Mint at Denver for the coinage of gold and silver. In March, 1895, the Secretary of the Treasury was authorized to contract for the construction of a new building designed to meet the special requirements of a government coinage Mint. On April 22, 1896, a site was purchased at the corner of Colfax Avenue and Delaware Street.

Construction of the new building began in 1897 and continued intermittently, under the supervision of James Knox Taylor, until 1904, when it was turned over to the Federal government. The new building was occupied in 1904 by a nucleus of assay workers from the branch Mint, but coinage operations did not actually commence until February, 1906. Experts from Philadelphia, New Orleans, Washington and San Francisco had been detailed at Denver for months prior to this date arranging the new equipment which, according to the Director of the Mint, was believed to be, "of the most approved designs for all the operations of coinage." Although designed specifically to house an industrial operation, however, great care was devoted to decorative elements. In terms of architectural design, the new Mint building was constructed within the turn-of-the-century tradition of architectural elegance.

NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY - NOMINATION FORM

(Continuation Sheet)

STATE	
Colorado	
COUNTY	
Denver	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
	FEB 1 1972

(Number all entries)

8. Significance

In 1934, international tension necessitated the movement of gold bullion from San Francisco inland, to Denver for safety. The following year, and again in 1944, additions were built on the original structure (indicated on attached drawing) to accommodate growth and increased storage requirements.

As one of two United States coinage Mints in operation at this date, the Denver Mint can easily be defined in terms of national significance. Within the context of local history, however, the Mint has played an equally significant role, symbolizing continuity in the development of Denver from a frontier mining center to a major metropolitan area. Strong emotional ties of pride and shared history have developed over the past one hundred years, binding the Mint closely, as an emotional landmark, to the City of Denver.

9. MAJOR BIBLIOGRAPHICAL REFERENCES

Arps, Louisa A. DENVER IN SLICES. Denver: Sage Books, 1959.
 ILLUSTRATED HISTORY OF THE UNITED STATES MINT. Ed. by George G. Evans. Philadelphia: George G. Evans, 1893.
 Hobart, E. L., comp. "Glitters of Gold." n.d.
 Miller, Fern V. "A Summary of The History and Operations of The United States Mint in Denver, Colorado." 1962.

10. GEOGRAPHICAL DATA

LATITUDE AND LONGITUDE COORDINATES DEFINING A RECTANGLE LOCATING THE PROPERTY			O R	LATITUDE AND LONGITUDE COORDINATES DEFINING THE CENTER POINT OF A PROPERTY OF LESS THAN TEN ACRES		
CORNER	LATITUDE	LONGITUDE		LATITUDE	LONGITUDE	
	Degrees Minutes Seconds	Degrees Minutes Seconds		Degrees Minutes Seconds	Degrees Minutes Seconds	
NW	° ' "	° ' "		39° 44' 23"	104° 59' 30"	
NE	° ' "	° ' "				
SE	° ' "	° ' "				
SW	° ' "	° ' "				

APPROXIMATE ACREAGE OF NOMINATED PROPERTY: less than one (1) acre

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE:	CODE	COUNTY	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE
STATE:	CODE	COUNTY:	CODE

11. FORM PREPARED BY

NAME AND TITLE:

Susan A. Nieminen, Assistant to the Director

ORGANIZATION

State Historical Society of Colorado

DATE

16 October 71

STREET AND NUMBER:

200 Fourteenth Avenue

CITY OR TOWN:

Denver

STATE

Colorado

CODE

08

12. STATE LIAISON OFFICER CERTIFICATION

NATIONAL REGISTER VERIFICATION

As the designated State Liaison Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service. The recommended level of significance of this nomination is:

National ☒ State ☐ Local ☒

Name

Stephen H. Hart

Title Colorado State Liaison Officer

Date 20 October 1971

I hereby certify that this property is included in the National Register.

Grant A. Remondy
 Chief, Office of Archeology and Historic Preservation

FEB 1 1972

Date

ATTEST:

Keeper of The National Register

Date

DEC 14 1971

SEE INSTRUCTIONS

Form 10-301
(Dec. 1968)

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES
PROPERTY MAP FORM

(Type all entries - attach to or enclose with map)

STATE	
Colorado	
COUNTY	
Denver	
FOR NPS USE ONLY	
ENTRY NUMBER	DATE
FEB 1	1972

1. NAME

COMMON: Denver Mint (Original Section)
AND/OR HISTORIC: United States Mint in Denver

2. LOCATION

STREET AND NUMBER:

West Colfax Avenue and Delaware Street

CITY OR TOWN:

Denver

STATE:

Colorado

CODE

08

COUNTY:

Denver

CODE

031

3. MAP REFERENCE

SOURCE:

U.S.G.S. Map, Englewood, Colorado Quadrangle 7.5 minute series

SCALE: 1:24000

DATE: 1965

4. REQUIREMENTS

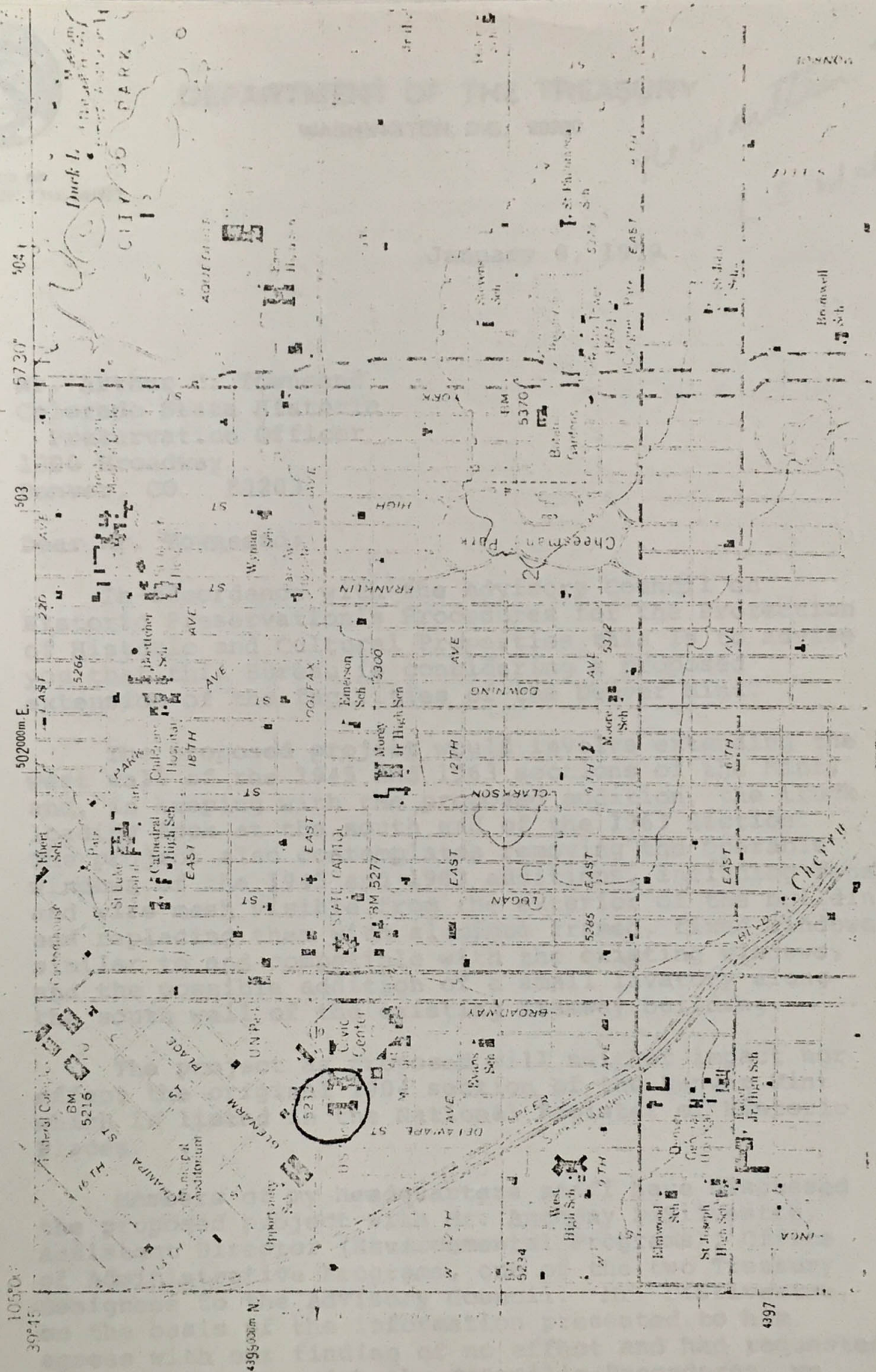
TO BE INCLUDED ON ALL MAPS

1. Property boundaries where required.
2. North arrow.
3. Latitude and longitude reference.

SEE INSTRUCTIONS

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

49631 SE
(ARV AD24)





DEPARTMENT OF THE TREASURY

WASHINGTON, D.C. 20220

OFFICE OF
DIRECTOR OF THE MINT

*new letter to
L.S. Wall*

January 8, 1979

Mr. Arthur C. Townsend
Colorado State Historic
Preservation Officer
1300 Broadway
Denver, CO 80203

Dear Mr. Townsend:

In accordance with the Advisory Council on Historic Preservation's Procedures for the Protection of Historic and Cultural Properties this is to advise you that this Bureau is considering a proposed extension of the facilities of the Denver Mint.

The proposed project would involve extending the west wall of the 1945 and 1963 sections of the Mint, and, in keeping with the proposed addition, the truck loading dock at the south end of the 1963 section. The project also contemplates removing the operable windows of the 1945 and 1963 additions, including fans and wire mesh visible from the exterior of the building, and replacing them with aluminum framed, fixed windows similar to and compatible with the existing windows, and the possible addition of a small lavatory along the south wall of the existing Tramway building.

The project as proposed will neither impact nor effect the original 1904 section of the Denver Mint which is listed in the National Register of Historic Places.

Members of my headquarters staff have discussed the proposed project with Mr. Anthony DiSilvestre, Assistant Director (Environmental Programs), Office of Administrative Programs, one of the two Treasury Designees to the Advisory Council. Mr. DiSilvestre, on the basis of the information presented to him, agrees with our finding of no effect and had requested that, in keeping with the Council's Procedures, we seek your concurrence.



Keep Freedom in Your Future With U.S. Savings Bonds

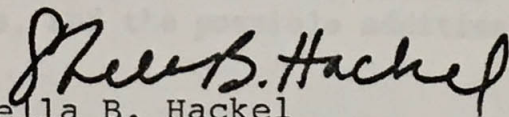
I have therefore arranged for Mr. DiSilvestre and representatives of my office and the Denver Mint to meet with you in Denver on January 10 or 11 in order for you to be briefed on the proposed project and to have an opportunity to discuss it with them. Mr. Louis Wall of the Council's Denver office will also be present. I am sure that at the conclusion of the meeting you will agree that our finding of no effect is a valid one.

In summary, we find that the proposed project at the Denver Mint will have no effect on, and cause no change in the quality of, the historical, architectural, archeological, or cultural character that qualifies the original 1904 section of the Denver Mint to be listed in the National Register of Historic Places.

This being the case, and at the conclusion of the meeting, I will ask that you sign the concurrence block provided below and return the original of this letter to Mr. DiSilvestre. Copies of the letter will be provided to you and to Mr. Wall of the Council.

Thank you for your kind attention to this matter and please be assured that the Department and this Bureau is aware of, and will always seek to comply with and fulfill the applicable goals and requirements of the environmental quality and historic preservation programs.

Sincerely,

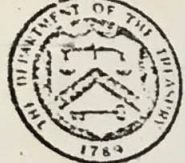


Stella B. Hackel
Director of the Mint

I concur with a finding of no effect on the original 1904 section of the Denver Mint, listed in the National Register of Historic Places, as a result of the proposed project outlined above.

Arthur C. Townsend (Date)
Colorado State Historic Preservation Officer

cc: Mr. Louis Wall
ACHP, Denver



OFFICE OF
SUPERINTENDENT

THE DEPARTMENT OF THE TREASURY

UNITED STATES MINT

DENVER, COLO. 80204

January 11, 1979

Mr. Louis S. Wall
Assistant Director
Office of Review and Compliance
Advisory Council on Historic Preservation
Post Office Box 25085
Denver, CO 80225

Dear Mr. Wall:

In accordance with the Advisory Council on Historic Preservation's Procedures for the Protection of Historic and Cultural Properties this is to advise you that Treasury's Bureau of the Mint is considering a proposed expansion of the facilities of the Denver Mint.

The proposed project would involve an addition along the west wall of the 1945 and 1963 sections of the Mint, and, in keeping with the proposed addition, extending the truck loading dock at the south end of the 1963 section. In connection with the proposed addition, and in order to improve the Mint's work flow, it is also proposed to extend a covered passageway along the west face of the 1935 section to the south wall of the original building and to reopen a window in this wall which was closed off in 1935 on account of the construction of a vault. This would provide work flow access to the 1935 vault. The project also contemplates removing the operable windows of the 1945 and 1963 additions, including fans and wire mesh visible from the exterior of the building, and replacing them with aluminum framed, fixed windows similar to and compatible with the existing windows, and the possible addition of a small outside lavatory.

The project as proposed will affect the original 1904 section of the Denver Mint which is listed in the National Register of Historic Places. Therefore, representatives of the Mint headquarters staff discussed the proposed project with me. On the basis of the information presented to me, I agree with the Mint's finding of no adverse effect, and request the concurrence of the Colorado State Historic Preservation Officer and Council.

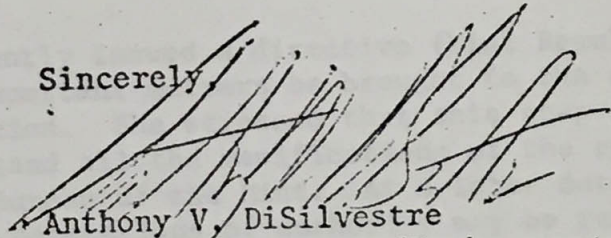
We therefore met with you and Mr. Arthur Townsend, the Colorado State Historic Preservation Officer, at the Denver Mint on January 11, 1979 in order to discuss the proposed undertaking. We mutually concluded

that the proposed project at the Denver Mint will have no adverse effect on, and cause no change in the quality of, the historical, architectural, archeological, or cultural character that qualifies the original 1904 section of the Denver Mint to be listed in the National Register of Historic Places.

We also agreed that the architect selected for the project would be required to consult with the Colorado State Historic Preservation Officer during the development of the plans to insure compatibility of the exterior design and materials, and concerning the connection of the passageway with the original 1904 building. This being the case, I also asked that Mr. Townsend sign the concurrence block provided below.

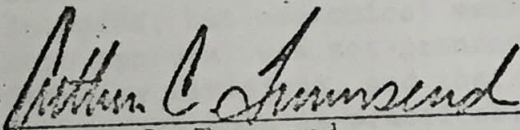
Thank you for your kind attention to this matter and please be assured that the Department and the Bureau of the Mint is aware of, and will always seek to comply with and fulfill the applicable goals and requirements of the environmental quality and historic preservation programs.

Sincerely,



Anthony V. DiSilvestre
Assistant Director (Environmental Programs)
Office of Administrative Programs
Office of the Secretary of the Treasury

I concur with a finding of no adverse effect on the original 1904 section of the Denver Mint, listed in the National Register of Historic Places, based on the meeting and agreement outlined above.



Arthur C. Townsend
Colorado State Historic Preservation Officer

January 11, 1979
(Date)

cc: Mr. Townsend

UNITED STATES GOVERNMENT

Memorandum

Bldg. & Mech. Div.

TO : Superintendent, Consultant, and Denver Mint Staff DATE: February 1, 1978

FROM : Stella B. Hackel, Director of the Mint

SUBJECT: Staff Meeting at Denver Mint, January 24, 1978

Mrs. Hackel emphasized that we are all part of the same organization and our aims must be coordinated toward excellence of performance in whatever capacity we are employed. The Bureau of the Mint is a comparatively small agency, but because it employs talented people and with the support of the Director, the Mint can develop into a more efficient operation which will be a merit to the Treasury Department.

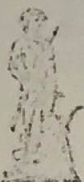
Following are the specific items about which Mrs. Hackel spoke to Denver Mint staff:

Item 1 -- The Director recently issued a directive (Mint Regulation #134) which established policy that important matters be brought to the attention of the Director before final action. She stressed that this step was necessary in order for her to understand all the ramifications of the responsibilities of the directorate of the Bureau of the Mint. At a later date, when it is deemed appropriate to do so, delegations of authority may be returned to apposite staff members.

Item 2 -- Abatement of the noise level within the Denver Mint is crucial. Because the concept of a new Denver Mint complex has been shelved for an indeterminate time, and because the present Denver Mint is expected to continue to serve the monetary needs of the nation, noise abatement practices must be instituted for (1) the safety and health of our employees; and (2) to improve the working conditions which may or may not result in increased production costs. Extravagance in carrying out noise level abatement is not intended, but economical measures will be reviewed. It was for these reasons approval was not granted to the Denver Mint to combine the Safety and Security Divisions, and that instruction was given to hire a new Safety Manager as soon as practicable.

Item 3 -- Any personnel actions which concern GS-12 and above positions must have the approval of the Director. All requests for personnel actions (at Bureau and field office levels) will be handled as efficiently as possible, and elongated delays will be avoided in the future.

Item 4 -- The present administration is very positive about continuing the coinage of pennies. In addition, the RIT consultants have amended their previous study (which recommended the cessation of penny production) as



erroneous. As a result, a portion of the Frankford Arsenal is being considered as one of several federal agency possibilities for production of pennies.

The Mint's inventory of pennies (8 to 12 weeks' production) is low in comparison to inventory of other denominations of coins (8 to 10 months' production). Therefore, the Bureau is accelerating their drive to commence penny production in other than established federal minting facilities.

Item 5 -- In other coinage production matters, the Treasury Department has recommended a Liberty design for the new smaller dollar. If Congress approves the legislation with the prototype as suggested, production could begin by July 1st with distribution to Federal Reserve Banks by November. A delay of approval by Congress, of course, would disrupt the above production and distribution target dates. Present plans do not call for the elimination of the half dollar or the 40 percent silver Eisenhower proof dollar. One of five lab tests requested reported that the 50 cent coin cannot be slugged down in size to cause problems with the new dollar; the other four lab tests have not yet been returned.

The fate of the unsold Bicentennial proof and uncirculated coin sets (only about half of the original 45 million sets have been sold) is being discussed at the Bureau level; they are presently mostly in storage, with some offered for sale at Mint outlets.

Complaints have been received that 1977 coins were not available during Calendar Year 1977. The Bureau considered the possibility of selling rolls of coins over the counter (in Mint outlets), but the ramifications were too many. Proposal has been made to revise the coin shipment schedule changing the present "first in-first out" method of transferring coins to FRBs.

Item 6 -- The American Numismatic Association is planning their first mid-year convention to be held at The Broadmoor in Colorado Springs, February 15-19, 1978; this convention will coincide with the grand opening of their new museum. The United States Mint at Denver has been invited to place an exhibit there with a booth for selling of our numismatic items (including the Jimmy Carter medal, Bicentennial proof and uncirculated sets, and Souvenir Denver Mint Sets). Denver Mint Numismatic sales people will staff the booth; the booth will be open from 1-7:00 p.m., Thursday and Friday, and 1-5:00 p.m. on Saturday, February 18th. Mrs. Hackel has received an invitation to join the ANA, and will be attending a portion of their convention; she suggested that both Mrs. Higby and Mrs. Davidson attend also.

Item 7 -- A meeting was held Monday, January 23rd, for the purpose of investigating methods of enhancing the Denver Mint tour route. Tentatively, plans call for taking a part of the Coining Division office to be used for additional sales space, and possibly converting the old Sweeps Cellar into a museum. Olga Melko, Chief of the Museum Division, Old Mint in San Francisco, attended Monday's meeting and will be at the

Denver Mint the week of January 30-February 3, 1978, to assist in an indepth study of the project. A cost analysis will be made to determine the time needed for numismatic sales revenues to cover incurred costs of this project. Plans for any change to the Numismatic sales area will not be finalized without approval from Denver Mint officials.

Item 8 -- Strikes at the Anaconda and Olin Corporations continue; however, Olin Corporation may possibly have a new contract by February 15th-- which is essential for the Mint to be in full production beyond the middle/end of March. The Philadelphia Mint is commencing Saturday production schedules to produce bronze. A contract has been negotiated with Bridgeport Brass Company, but that output will not be sufficient to continue full production.

Item 9 -- Mrs. Hackel stated that she has given high priority to improved communications intra-Mint; this will include the mailing of Bureau staff minutes to field offices, and the Mint Observer to be published on a regular basis. In addition, the internal audit staff will be meeting periodically in Washington, D. C., with the Director and Superintendents/Officers-in-Charge; and Mrs. Hackel has asked the internal auditors for periodic reports on all unresolved problems. She asked for input from field offices for an interpretation of what internal auditors should be investigating so that a definitive policy can be established. She also suggested that the auditors' reports be more comprehensive, pointing out the good as well as the bad practices.

Item 10 -- Storeroom inventories will be the subject of a soon-to-be issued Bureau directive. This directive will stipulate the proper mechanics to be followed for Storeroom inventories Mint-wide.

Item 11 -- Regarding the Antonucci grievance, decision was made by Mrs. Hackel (upholding Mrs. Higby's decision) that administrative leave could not be granted because (1) the Denver Federal Executive Board did not declare an emergency state for the Denver metropolitan area, and (2) to have granted administrative leave would be granting a favor to a particular employee on the basis of his freely chosen work disadvantage. Mrs. Hackel discussed her final decision with Mr. Leo Hart, President, AFGE Local 695.

Item 12 -- Mrs. Hackel asked Mr. Lawrence to comment on a draft plan for improvement in work areas, material flow, and work environment at the Denver Mint authored by Mr. George Ambrose. By 1985, it is anticipated that the Denver Mint will be producing six billion coins in addition to approximately 1.8 million cent blanks for San Francisco. Three possibilities for realizing this coin demand are: (1) finding off-site areas for stamping; (2) relocating four to six blanking presses to the Butler Building; (3) relocating several blanking presses to the Arsenal. In any case, noise abatement will be a problem and experimentation is taking place with encapsulation of one blanking press at this time. Pros and cons of the above suggestions are under study and are being carried out with the assistance of Mr. Ambrose.

UNITED STATES GOVERNMENT

Memorandum

DEPARTMENT OF THE TREASURY
Bureau of the Mint

DATE	2-6-78
FILE	C-12
GA	
GD	
SI	1978
FBI	
FJC	
JJP	
BMH	
DHM	
B	

TO : G. G. Ambrose
Assistant Director for Production

FROM : Kenneth E. Balge *KEB*
Chief, Security-OSHA/EPA Staff

SUBJECT: Off-Site Operations - Denver Mint

DATE: February 6, 1978

This is in response to your memorandum of January 30 requesting an assessment of security requirements in the event that certain blanking or coining operations are contemplated at the Rocky Mountain Arsenal (Building 362).

In relation to the alternatives listed my preliminary recommendations are as follows:

A. & B. - These options would involve a minimum of security, regardless of single or multi-shift operations, provided that the area now used for storage of completed 1-cent coins was sealed off from the new operational area. One (1) security officer would have to be present during working shift hours to cover ingress and to check and log movements of the blanks and or the annealed blanks to the Denver Mint. Slight modifications would also be necessary in the alarm system now installed.

I believe we could delete need for Security officer and make the Principal Supervisor Responsible.
GGA.

C. - Slightly more than above-would also require employee scanning (metal detection) on departure since substantive coin blanks are involved. Those blanks could and would be taken out for use in vending machines if employees were not checked when leaving.

Agree

D. & E. - These options would require a substantial build-up of security over the other alternatives. The actual coining of 1-cent pieces, (with storage in the west bay area), and the simultaneous blanking of substantive coin planchets (with transport to the Denver Mint), would necessitate added security employees because of the many protective variables. The exact staffing requirements could only be determined after a detailed operational plan was developed by your office and evaluated as to building access, periods of use, etc.

Agree



DATE 2/13/78

FILE C-12

IN

GGG

GLL

SEP

FEE

FCC

JJP

BME

DHM

B

February 10, 1978

Mrs. Stella B. Hackel
Director of the Mint
Washington, D. C. 20220

Attn: George Ambrose

Dear Mrs. Hackel:

As requested, we have reviewed the "Preliminary Plan of Action to Improve Material Flow, Materials Handling, and Work Environment at the Denver Mint," and the following comments are a consensus of opinions offered by the Denver Mint staff:

The estimated production quantities can be met with the present Mint layout through 1982. The status quo must be changed, however, to improve our working conditions, material flow, and the reduction of congestion and noise levels. In the present building almost anything we do to reduce noise levels would add to our congestion.

The first option we looked at was using the Butler building for punch presses. The Butler building would accommodate four presses. The cost of upgrading the building for installation of the presses is estimated at \$60,000. This does not include cost of encapsulating the presses for noise control, as this will have to be done no matter where the location. Another disadvantage of the Butler building is the material handling necessary by fork lift between buildings. In inclement weather this would be very difficult. The route used would add to congestion in our shipping and receiving area. Perhaps more importantly, this option would not suffice for production quantities required in 1985. In summation, we are against moving blanking presses to the Butler building.

We see excellent possibilities in the use of Building 362 at the Arsenal, if a long-term commitment can be made. The use of Building 362 at the Arsenal would provide necessary space for blanking and annealing to enable the Mint to meet production requirements beyond 1985 even if projections of demand turn out to be slightly underestimated.

We will continue our industrial/plant layout study under the planning criteria outlined by Mr. Ambrose.

Sincerely,

151

Harry E. Lawrence
Acting Superintendent

cc: Frank H. MacDonald
Deputy Director

Superintendent
Deputy Superintendent

FEB 22 1978

Mrs. Betty Higby
Superintendent
United States Mint
320 W. Colfax Street
Denver, CO 80204

Dear Mrs. Higby:

This is in response to your letter of February 10 in which your comments on our "Preliminary Plan of Action to Improve Material Flow, Materials Handling, and Work Environment at the Denver Mint" were discussed.

Your letter outlined a number of reasons for having taken a position against moving blanking presses to the Butler Building (s). We accept this as your preliminary position but not necessarily as our final position until verified by the more detailed industrial/plant layout analysis provided for in the plan. Alternatives must be studied in more depth than is apparent to firmly establish our position on the blanking presses.

You see distinct advantages in long-term use of Building 326 at Rocky Mountain Arsenal for relocation or expansion of certain coin production processes as auxiliary to the Denver Mint. We agree and will seek Department of the Army approval for use of Building 362 for a period of 15 years. Building 262 will be included in our request; your need to continue its long-term use as a warehouse/strip storage facility is evident.

We want to move ahead as expeditiously as we can on the Denver Mint Improvement Project. The referenced industrial/plant layout study must thus be completed as soon as practical, realizing that personnel assigned thereto must be involved in other projects as well. It is anticipated your Coining Division and Building/Mechanical Division technical personnel will be extensively involved in completing the industrial/plant layout study, in consultation with other segments of your organization.

In order that we tentatively establish the scope of effort required, and the time frame for completing the study, it is requested you establish a project plan to include the following elements.

1. Breakdown of study by major tasks and subtasks.
2. Identification of project coordinator, and technical personnel having responsibility for tasks and subtasks.
3. Alternatives now expected to be considered and evaluated. Additional alternatives will be developed during the study. ✓
4. Time-phase chart on overall project showing task interface and estimated time required to complete tasks/project.

Please proceed with your effort on this project and develop your plan for accomplishing the study as outlined above. Mr. Ambrose of this office will be at the Denver Mint on March 8-10 and will review and discuss the plan you have developed with your technical staff, prior to formal submittal.

Sincerely,

151

Stella B. Hackel
Director of the Mint

cc: S.B. Hackel
F.H. MacDonald
G.G. Ambrose
ALL STAFF

Darlington - Lam. recd.

DNEVER MINT IMPROVEMENT STUDY

- 1.0 Define the Problem, prepare over-all plan of action, and submit report to the office of Production by 3/24/78
- 1.1 List Perceived General Problem Areas
- 2.0 List General Potential Solutions
- 2.1 List various Alternatives
- 3.0 Limiting Factors
- 3.1 List general parameters
- 4.0 List and Identify Action Items
- 5.0 Initiate, Assign, and Schedule Actions
- 6.0 Identify Specific Problems
- 7.0 Investigative Actions and Conclusions
- 8.0 Investigation Action Assignments

1.0

The Problem

The Denver Mint must improve material flow, materials handling procedures, and the general work environment and must be capable of meeting 1985 projected production requirements.

1.1 Perceived General Problem Areas

1.1.1 Excessive noise levels.

1.1.2 Overcrowded conditions (office, maintenance, & production areas)

1.1.3 Unbalanced and inadequate ventilation.

1.1.4 Structure is overloaded or loaded to limit.

1.1.5 Excessive energy usage and energy waste.

1.1.6 Excessive effort required for material handling.

1.1.7 Excessive floor damage and maintenance costs.

1.1.8 Double handling of process materials.

1.1.9 Cross-flows of process materials.

1.1.10 OSHA standards not being met.

1.1.11 Electrical deficiencies.

1.1.12 Wasted space

1.1.13 High temperatures in summer, cold areas in winter.

1.1.14 Security and Fire Protection systems need improvement.

- 2.0 General Potential Solutions.
- 2.1 Alternatives.
 - 2.1.1 Use existing building and process layouts making minor changes to correct deficiencies.
 - 2.1.2 Use existing building and site but start with "empty shell" approach and establish optimum use of existing facilities.
 - 2.1.3 Use existing building and site and move some production processes to south Butler building.
 - 2.1.4 Use existing building and site and move some production processes to two south Butler buildings.
 - 2.1.5 Use existing building and site. Raze two south butler buildings and build one new structure on site of Butler buildings.
 - 2.1.6 Use existing building and site but extend building to include south roof area beyond existing Metal Working/Preventive Maintenance shop.
 - 2.1.7 Use existing building and site but extend dock area along entire south side of building and add new enclosed structure at ground level on 1st floor level from west dock south, to provide additional space for production operations.
 - 2.1.8 Any combination of 1 thru 7 above.
 - 2.1.9 Use existing building and site but move some production processes to off-site government facility.

3.0 Criteria, Restrictions, Conditions

3.1 The general parameters to be considered are:

3.1.1 Satisfy OSHA requirements:

Environment (sound, pollution, safety, etc.)

Electrical

3.1.2 Plan to satisfy projected coin production needs through 1985 for Western Sector. Annual SFAO capability is 1,800 million cents with Denver - supplied blanks @250,000 lbs/week.

3.1.3 If Denver (within existing ^{buildings} ~~property lines~~) cannot meet the req'd demand, SFAO to take-up up to 1,800 million cents/year first, before any Denver ^{on or} ~~off-site~~ ^{expansion} ~~production~~ can be considered.

3.1.4 Production capability to be based on 3 shift - 8 hr. - 5 day operation.

3.1.5 5¢ - \$1.00 coins must be produced on existing property.

3.1.6 Off-site production, if required, limited to any or some combination of following:

3.1.6.1 Blanking of cents

3.1.6.2 Annealing of cent blanks

3.1.6.3 Riddling of cent blanks

3.1.6.4 Upsetting of cent blanks

3.1.6.5 Stamping of cents

3.1.6.6 Post-stamp riddling of cents

3.1.6.7 Storing cents

3.1.6.8 Shipping cents

3.1.6.9 Blanking of all other blanks

3.1.6.10 Annealing of all other blanks

3.1.6.11 Post-anneal riddling of all other blanks

3.1.7 Bulk shipment of a portion of 1-cent coins to FRB's in the future is a likelihood.

Use below - projected production needs:

3.1.8.1

MILLION PIECES (Annually)

<u>FY</u>	<u>1¢</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	4200	361	528	440	53	36	5618
1980	4620 ^{4,500 P 1,120 SF}	396	572	484	57	42	6171 - .120 SF
1981	5040 ^{4,312 1,728 SF}	433	616	528	66	45	6728 - .728 SF
1982	5460 ^{4,325 SF}	475	664	581	97	48	7325 - 1,325 SF
1983	5922 ^{4,122 P 1,18 SF}	519	717	638	119	54	7960 - 1.8 SF
1984	6426 ^{4,626 P 1.8 SF}	568	774	704	132	60	8664 - 1.8 SF
1985	6930 ^{5,13 P 1.8 SF}	616	836	792	132	60	9366 - 1.8 SF

3.1.8.2

MILLION PIECES DAILY (24 HRS)

<u>FY</u>	<u>1¢</u>	<u>5¢</u>	<u>10¢</u>	<u>25¢</u>	<u>50¢</u>	<u>1.00</u>	<u>TOTAL</u>
1979	17.5	1.5	2.2	1.83	.22	.15	23.4
1980	19.25	1.65	2.38	2.0	.24	.175	25.7
1981	21.0	1.8	2.57	2.2	.275	.19	28.03
1982	22.75	1.98	2.77	2.42	.40	.2	30.52
1983	24.67	2.16	2.99	2.66	.46	.225	33.16
1984	26.775	2.37	3.225	2.93	.55	.25	36.1
1985	28.875	2.57	3.48	3.3.	.55	.25	39.03

3.1.9

Off-site production to some degree on RMA must be one of the alternatives to be considered (without any expansion of present space).

4.0 Action Items.

4.1 List Machine production capacities.

4.2. Make "as-Built" layouts of site and floor plans.

4.3 Make layout drawings showing ventilation equipment and air flow volumes.

4.3.1 Measure air flow volumes and show on drawings.

4.4 Determine and list optimum equipment spacing requirements and arrangements.

4.4.1 Blanking equipment

4.4.2 Annealing equipment

4.4.3 Coining equipment

4.4.3.1 Bliss quad presses

4.4.3.2 Columbia presses

4.4.3.3 Conventional presses

4.4.4 Riddling equipment

4.4.5 Upset mills

4.4.6 Counting & Bagging equipment

4.4.7 Maintenance Shops and equipment

4.4.8 Make optimum layout sketches for above.

4.5. Make drawings showing existing process flow patterns, surge areas, and surge area capacities.

4.5.1 *SHOW EXISTING B/M DIVISION EQUIP.*

4.6 Review office layouts and identify deficiencies.

4.6.1 Review organizational structure.

4.7 Review visitors tour routes and identify proposed changes.

4.8 Identify floor load limits on layout drawings.

4.9 Identify energy losses on layout drawings.

4.9.1 Measure energy losses.

4.10 Identify on flow diagrams the existing material handling methods.

4.11 List and identify OSHA non-compliance.

4.12 List and identify electrical deficiencies (specific locations)

4.12.1 *IDENTIFY ELECTRICAL DEFICIENCIES IN VIEW OF NEW PRODUCTION CONFIG.*

- 4.13 List and identify air, steam, and water piping deficiencies (specific locations).
- 4.13.1 *Identify air, steam and water deficiencies*
- 4.14 Identify areas of double handling of materials. (list and/or show on flow diagrams).
- 4.15 Identify areas of cross-flows of materials (list and/or show on flow diagrams).
- 4.16 List and show on floor plan and/or site layouts areas of "wasted" space.
- 4.17 Identify and show on drawings areas where temperatures are uncomfortable; winter; summer.
- 4.18 Identify and List on layout drawings all noise levels.
- 4.18.1 Measure noise levels and parameters used.
- 4.19 Conduct Survey Requesting Input from 1st Line Supervisors.
- 4.20 Identify Security and Fire Protection problems
- 4.20.1 *PREPARE DRAWINGS FOR EXISTING SECURITY AND FIRE ALARM SYSTEMS*
- 4.21 Visit Winnipeg Mint and Philadelphia Mint for Ideas.

5.0 Action Items Assigned

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
4.1	Summers, Lord	4/14
4.2	Vaitaitis	4/7
4.3	Neal, Morgan	4/21
4.3.1	Neal, Morgan	4/28
4.4.1 through 4.4.7	Vaitaitis & activity supervisor	4/14
4.4.8	Vaitaitis	4/28
4.5	Summers, Lord	4/18
4.6	Div. Heads	4/28
4.6.1	Div. Heads	4/28
4.7	Div. Heads	4/14
4.8	Neal	5/5
4.9	Neal	5/12
4.9.1	Neal, Morgan	5/2
4.10	Summers, Lord	5/5
4.11	Vaitaitis, Safety Officer, Billapando	4/28
4.12	Vaitaitis, Miller	4/28
4.13	Gose	4/28
4.14	Vaitaitis	5/5
4.15	Vaitaitis	5/5
4.16	Vaitaitis	5/12
4.17	Billapando	5/5
4.18	Billapando	6/9
4.18.1	Lord, Billapando	6/9
4.19	Vaitaitis	4/22
4.20	Vaitaitis, Reavey, Barwinski	4/28
4.21	Vaitaitis	4/7

* includes coordination of required drafting

6.0 Specific Problems.

- 6.1 Punch Press Noise Levels exceed 85dBA
- 6.2 Coin Press Noise Levels exceed 85dBA
- 6.3 Riddler Noise Levels exceed 85dBA.
- 6.4 Annealing area - CO levels often exceed 50ppm.
- 6.5 Annealing area-summer temperatures often exceed 110° F.
- 6.6 South Production Area (1st Floor) - area is cold in winter when south dock door remains open.
- 6.7 General cluttered, drab appearance throughout Mint.
- 6.8 Floors are continually damaged from dropped tanks and truck wheels.
- 6.9 Oil, grease and dirt tracked into office areas.
- 6.10 Employees track in snow, mud and grit through front entrance.

- 7.0 Investigative Actions.
- 7.1 Enclose a punch press to evaluate noise reduction.
- 7.2 Evaluate methods of reducing coin press noise levels.
- 7.2.1 Enclose feed tank/feeder bowl assembly.
- 7.2.2 Investigate noise reduction due to feed finger assembly.
- 7.3 Investigate potential layouts of Equipment in existing facility.
- 7.3.1 Make improved equipment within layouts existing facilities to correct deficiencies.
- 7.3.2 Show revised process flow.
- 7.4 Evaluate existing organizational structure and project changes thru 1985.
- 7.5 Evaluate potential for automated handling of material.
- 7.6 Investigate the availability of off-site government facilities.
- 7.6.1 Investigate availability of natural gas at off-site facilities.
- 7.6.2 Investigate availability of sewer facilities at off-site facilities.
- 7.6.3 Investigate availability of utilities at off-site facilities.
- 7.6.4 Investigate availability of employee conveniences at off-site facilities.
- 7.7 Make optimum layouts of facilities.
- 7.7.1 optimizing use of office space to meet 1985 projections.
- 7.7.2 improving tourist routes as proposed.
- 7.7.3 improving employee access to building.
- 7.7.4 optimizing equipment layouts to meet OSHA standards, correct noise problems, reduce congestion, improve material flow, and utilize improved material handling techniques.

- 7.7.4.1 Revise process flow diagrams and identify on flow diagrams the proposed material handling methods.
- 7.7.4.2 Identify those operations or processes and equipment which should be relocated outside the existing Mint building.
- 7.8 Make layout drawings of proposed use of outside facilities and revise process flow diagrams.
 - 7.8.1 using one Butler building.
 - 7.8.2 using two Butler buildings.
 - 7.8.3 using new facility on site of existing Butler building.
 - 7.8.4 using new addition on west and south of Mint building.
 - 7.8.5 using 2nd floor south roof area.
 - 7.8.6 using potential off-site government facilities.
 - 7.8.7 any combination of the above.
- 7.9 Evaluate construction and preparation costs.
 - 7.9.1 to modify one Butler for production use.
 - 7.9.2 to modify two Butler buildings for production use.
 - 7.9.3 to replace Butler buildings with new facility for manufacturing operations.
 - 7.9.4 to provide addition to west and south side of Mint building.
 - 7.9.5 to enclose 2nd floor roof area for use.
 - 7.9.6 to utilize off-site government facilities.
 - 7.9.7 to utilize combinations of the above.
- 7.10 Evaluate annual operational costs, including costs of organizational staffing and security, to
 - 7.10.1 expand operations to one Butler building.
 - 7.10.2 expand operations to two Butler buildings.

- 7.10.3 expand operations to facility on site of Butler buildings.
- 7.10.4 expand operations to west-south extension to Mint building.
- 7.10.5 expand operations to off-site government facilities.
- 7.11 Review all concepts in detail.
 - 7.11.1 List deficiencies of each proposal.
 - 7.11.2 List specific advantages of each proposal.
 - 7.11.3 List cost comparisons and changeover problems expected to construct and prepare outside facilities.
 - 7.11.4 Make cost comparisons of outside facilities.
- 7.12 List specific changes recommended for optimum noise reduction.
- 7.13 List specific changes recommended to optimize ventilation.
- 7.14 List specific changes to reduce energy losses.
- 7.15 Prepare final report and identify the Denver Mints' final recommendations.

8.0 Investigative Action Assignments

<u>Action Item (para.) No.</u>	<u>Responsibility*</u>	<u>Sched. Compl. Date</u>
7.1	Lord, Billapando	6/9
7.2.1	Sjaardema, Billapando	6/9
7.2.2	Vaitaitis	6/9
7.3	Summers, Lord	5/5
7.4	Sjaardema	5/19
7.5	Vaitaitis, Morgan, Engineers	7/7
7.6	Sjaardema	7/7
7.7.1 thru 7.8.4.2	Engineers, draftsman	7/7
7.9	Sjaardema	9/1
7.10	Project Committee & Cost Accounting Rep.	9/1
7.11	Project Committee	9/8
7.12	Project Committee	8/4
7.13	Project Committee	8/4
7.14	Project Committee	8/4
7.15	Vaitaitis, Sjaardema	9/22

* includes coordination of required drafting

Project Committee: Lawrence
Darlington
Summers
Sjaardema
Lord
Neal
Vaitaitis

UNITED STATES GOVERNMENT

Memorandum

RECEIVED

MAR 17 1978

OFFICE OF
SUPERINTENDENT
U. S. MINT AT DENVER

DATE: MAR 14 1978

TO : Stella B. Hackel

FROM : George G. Ambrose

Initialed

SUBJECT: Trip Report - March 8, 9, and 10 Visit to the Denver Mint

The primary purpose of subject visit was to review and discuss the Denver Mint's project plan for completing the previously outlined Industrial/Plant Layout Study to improve work areas, material flow and work environment at that facility. This subject, and other items of lesser importance, will be commented upon in the following paragraphs.

1. Industrial/Plant Layout Study - Although effort had been devoted by Coining Division personnel to developing material flow charts and equipment layouts on current work flow and processes, no action had been taken to prepare a needed project plan as requested in our February 22 letter. Several meetings were held with the Deputy Superintendent, concerned Division Heads, and technical personnel to discuss project scope, method of project accomplishment, organization, and the development of a project plan.

It was established that Mr. Albert Vaitaitis, Electrical Engineer in the B and M Division, will serve as project Coordinator/Director with overall responsibility and authority to develop the project plan and see it through to completion. The project plan, as briefly outlined in our February 22 letter, is expected to be completed and mailed to us within two weeks--by March 24. Final completion of the study project is expected to require three to six months.

It is important that new and innovative approaches to Mint operations be considered in this study. It is therefore requested you approve a trip for Mr. Vaitaitis to visit the Winnipeg Mint and the Philadelphia Mint for about two days each to observe the latest state-of-the-art Mint equipment and operations and to learn current approaches available and under study in noise control. If you agree, I will set up the visit for Mr. Vaitaitis. Travel authority to Winnipeg, Canada must be signed by you.

Greg + 1 - B & M
1 - (Coining)



Additionally, I believe it is desirable for Mr. Vaitaitis, and I would also suggest attendance by Mr. Bill Smith, to attend the May 22-26 "Industrial Noise Control Workshop" in Dearborn, Michigan, to be sponsored by the Society of Manufacturing Engineers - see enclosure (1). Your approval of Mr. Vaitaitis' attendance is requested.

The Denver Mint B and M Division has needed for some time (Form 52 submitted 3 years ago) and will specifically require the services of an engineering technician for this project--in order to free up their engineering personnel for needed engineering oriented effort. Your concurrence in the Denver Mint proceeding with the acquisition of a full-time Engineering Technician, GS-9, is requested.

2. Use of Rocky Mountain Arsenal Building 362 in its entirety has been denied - see letter, enclosure (2). This denial, in response to Mr. Frank Rhea's December 14 letter, continues to assign the West bay of Building 362 to the Mint's use and advised that other RMA buildings are available for our consideration and potential use.

On March 9, Mr. Sjaardema and myself inspected two RMA buildings, 624 and 625, which have been indicated as being potentially available. While Mint operations could be conducted in building 624, and 625 could be used for coil storage, the buildings are substandard to Mint needs. We should delay any decision on their use and continue contacts with RMA through Mr. Sjaardema and the project coordinator, for additional buildings are expected to become available to the Mint in the future.

Details on Buildings 624 and 625 follows:

	<u>624</u>	<u>625</u>
Frame	Wood truss - clear span	Wood truss - wood columns
Siding	Cellotex covered by 4' x 8' asbestos ($\frac{1}{4}$ ")	Cellotex covered by 4' x 8' asbestos ($\frac{1}{4}$ ")
Roof	Composition shingles	Composition shingles
Floor type	Slab on grade	Dock height slab
Floor design	3,000 # per Sq.Ft.	Not determined
Clear height (floor-truss)	Approx. 16'	Approx. 12'
Rail	Access to rear	Access to rear
Approx. size	70' x 360'	45' x 240'
Elect.Service	440V, 3 Phase	110V, 20 Amp, Single Phase
Utilities	Sprinkler System	Sprinkler System
	Steam heat	Steam heat
	Toilet area	
	Office area	

Condition: Floors cracked, siding broken and unsightly,
doors and trim need painting badly.

3. Carbide Blanking Die Sets - The Denver Mint is currently using one-cent carbide die sets; however, the cost of maintenance and loss in production is reported to exceed that for steel die sets. While in the Philadelphia Mint, Mr. Vaitaitis will explore this subject with their technical staff to determine why the use of carbide die sets have proved exceptionally favorable over steel die sets at that facility.
4. The new 20,000 pound capacity replacement elevator at the rear of the building is due to be installed in August 1978.
5. In discussions with the Head of the Coining Division, adequate personnel are on hand to meet our 22.94 million piece per day production assignment.
6. The 24 older coin presses in the second floor press room are not being operated due to current level of production assignment. Future increases of production requirements to and in excess of 25 million pieces per day will again require the use of at least a part of the 24 presses. The presses currently do not meet OSHA standards due to need for point of operation guarding and an air clutch/brake assembly (estimated to cost \$16,000 for each press). Since need for use of the coin presses will arise before we can expect to have acquired replacements, the Coining Division will coordinate with the B & M Division to determine what minimum modifications will be made (perhaps point of operation guarding) before operation of the presses is resumed.
7. Summary of Recommendations
 - (a) Mr. Albert Vaitaitis be instructed to travel to the Canadian Mint in Winnipeg and the Philadelphia Mint for a visit in the near future.
 - (b) He also be authorized to attend the "Industrial Noise Control Workshop" at Dearborn, Michigan on May 22-26, subject to our investigating the availability of a like workshop sooner and in the vicinity of Denver.
 - (c) Authorize the Denver Mint to proceed immediately on the recruitment and employment of an engineering technician.

cc: B. Higby ✓ C. Pierce
F. MacDonald G. Ambrose
A. Goldman
F. Frere

SOCIETY OF MANUFACTURING ENGINEERS

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February 27, 1978

Dear Sir:

You now have the opportunity to learn practical, low cost ways to meet the latest OSHA noise standards!

Make plans now to attend the Society of Manufacturing Engineers first ever five day "INDUSTRIAL NOISE CONTROL WORKSHOP" on May 22-26, 1978 in Dearborn, Michigan at the Dearborn Inn.

Register to attend and you will examine, in depth, such vital topics as:

- * the causes of noise problems
- * alternative methods of solving your problems
- * estimating the effectiveness of various methods
- * selection of instruments

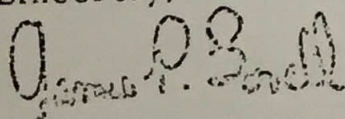
You will also get valuable hands on experience with some instruments. The thrust of the program will be on finding practical solutions to your noise problems. A keen eye will be kept on cost and interruption of production schedules.

Mr. Bruce Fader, Senior Consultant, Donley, Miller & Nowikas Inc., Consulting Acoustical Engineers, will serve as the workshop leader.

Registration fees are \$385.00 for SME and affiliate members and \$425.00 for non-members. These costs, as well as travel, lodging and meal expenses are tax deductible.

Registration is on a first-come-first-serve basis so make your reservation today by calling (313) 271-1500 extension 311 or just mail in the enclosed coupon.

Sincerely,



James P. Lovell
Program Administrator
Special Programs Department

P. S. Attendance is limited so register now.

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ENCLOSURE (1)



DEPARTMENT OF THE ARMY

ROCKY MOUNTAIN ARSENAL
~~DENVER, COLORADO 80222~~
Commerce City, CO 80022

SARRM-FEE

6 March 1978

Facilities Project Manager
Department of the Treasury
Bureau of the Mint
Denver, CO 80204

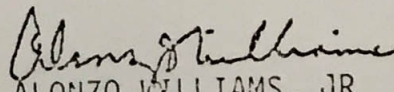
Dear Sir:

Reference is made to your letter dated 14 December 1977 concerning your occupancy of Building 362 at Rocky Mountain Arsenal.

I respectfully submit that approximately 29,988 square feet of space in Building 362 has been delegated to Fitzsimons Army Medical Center, US Army Commissary, under an Interservice Support Agreement effective 1 April 1978. Approximately 11,466 square feet of space in Building 362 has been delegated to the Bureau of the Mint under an existing Interservice Support Agreement with an expiration date of 1 April 1981.

Rocky Mountain Arsenal has available other potential manufacturing/storage facilities for consideration and would be receptive to granting use of these facilities if they would meet your needs. Arrangements for inspection of these facilities can be made through the Director of Facilities, Rocky Mountain Arsenal, telephone 288-0711, Extension 264.

Sincerely yours,


ALONZO WILLIAMS, JR
LTC (P), CmIC
Commanding



UNITED STATES GOVERNMENT

Memorandum

TO : All First Line Supervisors

DATE: March 17, 1978

FROM : *APV*
Albert P. Vaitaitis, Project Director for a Study for
Improvement in Work Areas, Material Flow and Work
Environment

SUBJECT: Denver Mint Survey Questionnaire

The Bureau of the Mint/Denver Mint management recognizes the fact that Denver Mint is operating below what should be the ideal conditions. The existing situation is a result of a variety of factors, many of which were or may have been beyond the management control.

A project team was formed to study and come up with a plan for the Denver Mint to comply with OSHA requirements, improved working conditions, and to meet the predicted production needs through 1985.

A variety of alternatives will be considered; the best solution will be recommended to the Bureau of the Mint. In order to proceed in an orderly manner all of the shortcomings have to be identified. Your knowledge as a supervisor, especially in your own area of activity, is the best available source of information, and your willingness to contribute your ideas will get the project going in the right direction, and will eventually influence the results of the study. Your help is needed now and will be needed throughout this project.

Please fill out the attached questionnaire and return it by Wednesday, March 22 to Elinda Sainz, B & M Office.



3. List any problems as in question No. 1 that you see in other areas of the Mint.

1. List any safety hazards in material flow and handling problems and inadequate working conditions that exist in your area of operation at the present time.

2. List any suggestions you have as to how the above-listed existing problems can be corrected. Include all of your ideas, even though some of them may cause reduction in productivity.

4. General Comment. What would you do and where would you start, if you were given the responsibility to conduct the study to make this a better place to work (no new Mint, please).

(Use additional paper, if required)

RECEIVED

Division _____
Branch _____
Supervisor _____

APR 1978

1. List any safety hazards in material flow and handling problems and inadequate working conditions that exist in your area of operation at the present time.

Reply to Attn of: M-P

George G. Ashbaugh
Assistant Director for Production

Denver Mint - Second Floor Presses

Your April 7 memorandum posed the question -- what equipment should be placed on the second floor of the Denver Mint, and what is the cost of replacement.

Relating this question to the "refinery" press room operation, the following comments are in order. The area currently houses 24 conventional mint type presses--none of which totally comply with OSHA. Nine (9) of the presses are of 1957 or earlier vintage, and fifteen (15) were acquired in 1965.

2. List any suggestions you have as to how the above-listed existing problems can be corrected. Include all of your ideas, even though some of them may cause reduction in productivity.

Our coin press replacement program was abandoned in 1976 due to a change in priorities. It is still be appropriate pending the outcome of the Denver Mint Improvement study. The plan provided for:

- (a) Replacing the 15 presses acquired in 1965 on the second floor, and eventually upgrade to meet OSHA.
- (b) Replacing the 9 pre-1957 presses with six Columbia presses relocated from the first floor.
- (c) Replacing the six Columbia presses relocated from the first floor with six new 6N-200 Series coin presses.

The equipment cost for this plan is estimated to be \$600,000 in Series 6N-200 presses at (\$100,000).

In addition to work flow, the major problem in the second floor press room is vertical clearance and limited floor design. Only a low profile press such as a Columbia press can be installed on the second floor, and the floor design is 200 pounds per square foot.

(Use additional paper, if required)

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APR 20 1978

Stella B. Hackel
Director of the Mint

OFFICE OF
SUPERINTENDENT
U. S. MINT AT DENVER

APR 17 1978

George G. Ambrose ^{Initialed}
Assistant Director for Production

Reply to Attn of: M-P

Denver Mint - Second Floor Presses

Your April 7 memorandum posed the question -- what equipment should be placed on the second floor of the Denver Mint, and what is the cost of replacement.

Relating this question to the "refinery" press room operation, the following comments are in order. The area currently houses 24 conventional mint type presses--none of which totally comply with OSHA. Nine (9) of the presses are of 1957 or earlier vintage, and fifteen (15) were acquired in 1965.

Our coin press replacement program was abandoned in 1976 due to a management decision not to procure sixteen (16) presses we had bids on--since the future of the cent coin was questionable. Our replacement plan was appropriate then and may still be appropriate pending the outcome of the Denver Mint Improvement study. The plan provided for:

- (a) Retaining the 15 presses acquired in 1965 on the second floor, and eventually upgrade to meet OSHA.
- (b) Replacing the 9 pre-1957 presses with six Columbia presses relocated from the first floor.
- (c) Replacing the six Columbia presses relocated from the first floor with six new 6K-200 Bliss coin presses.

The equipment cost for this plan is estimated to be \$600,000 (6 Bliss 6K-200 presses at \$100,000).

In addition to work flow, the major problem in the second floor press room is vertical clearance and limited floor design. Only a low profile press such as a Columbia press can be installed on the second floor, and the floor design is 200 pounds per square foot.

orig: Al Vaitaitis
copy: Harry Lawrence
George Sparden
Wm. Darlington
Wm. Summers
Dick Lord
Barney Neal

Should we choose to do so later, all eleven of the Columbia presses could be moved to the second floor concurrently to replace fourteen (14) of the 24 conventional presses while retaining ten (10) of the conventional units there. Due to weight difference in the coin presses, we can install about 3 Columbia presses for 4 conventional presses we remove. The equipment cost for this plan is estimated at \$1,100,000 (11 Bliss 6K-225 presses at \$100,000).

The Denver Mint Improvement study will specifically address the second floor press room in conjunction with other elements of the study. I, therefore, suggest we await its conclusion then determine the approach we will take in this decision. In the meantime, we expect to purchase up to twelve (12) new coin presses this fiscal year, with delivery to the Philadelphia or Denver Mint to yet be designated.

cc: E.T. Davidson ✓
A.J. Goldman
G.G. Ambrose

UNITED STATES GOVERNMENT

Memorandum

TO : Duane R. Sjaardema, Supt.
Bldg. & Mech. Division

DATE: April 18, 1978

FROM : A.P. Vaitaitis *APV*
Electrical Engineer

SUBJECT: Trip Report - April 3 thru 7 visit to Winnepeg and Philadelphia Mints

The primary purpose of the visit was to familiarize myself with the equipment layout, material flow, the automation of production lines, and to learn the current approaches available or under study for noise control. Additionally, I was to investigate the reasons why the utilization of carbide dies in the Philadelphia Mint is an apparent success, while the Denver Mint is still having problems.

Winnepeg

All coin production/material storage is done on the ground floor. One end of the building is strip receiving; the other end is coin shipping.

The strip is delivered in open bed trucks and/or trailers which back into the dock inside the building. The strip coils, which are 8" wide and 4 ft. in diameter, are unloaded with an overhead crane and deposited in the coil storage area nearby. Since the coils are only 8" wide, there is no need to up-end them. The crane can deposit them on floor in a flat position, or in storage racks in the upright position. Records are kept of all incoming shipments, however, the coils are not checked for weight at the time of receipt; the weight is recorded as coils are delivered to blanking.

There are two obvious advantages in Winnepeg over the Denver set-up to receive coils: indoor dock and handling of coils by crane, requiring no lift trucks.

The strip coils for blanking are delivered by crane to a Coil Buggy, one of which is located next to each coil reel. The Coil Buggy is a coil storage & reel loading device, hydraulically operated, transferring the coil from "buggy" to coil reel. Blanking presses are similar to the Denver Bliss HP2-100, but, I believe, of larger tonnage (HP2-150). Carbide dies are used for all strip, except stainless steel in which case M42 steel dies are utilized. Punch presses run at 400-450 SPM. The scrap is rolled up into coils and shipped back to the strip supplier for credit. The produced blanks fall into a riddler (shaker), from which they go into a conveyor system.



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Conveyors (bucket type, aluminum) take the blanks to surge hoppers above the upsetting mills. These hoppers are equipped with load sensing devices (load cells) providing a visual read-out for the punch press operator, who can select any one of several hoppers for the blanks, as required. Conveyors take the upset blanks to either the blank pre-wash or blank annealing furnace. Only oily blanks are routed thru the pre-wash to remove oil before annealing. Annealed blanks continue on through the burnisher/washer and dryer, and go into tote boxes. Tote boxes are carried by conveyor to the blank storage room, where a lift truck for the first time is employed to remove the tote boxes from the conveyor and to stack them for storage.

The basic differences in material handling between the Winnepeg and the Denver Mint are the employment of the Coil Buggy (manufactured by Handling Specialty Manufacturing Ltd., 734 Kipling Ave., Toronto, Ont., Tel. 251-5269), the sequence of riddling - upsetting - annealing operations, the existence of a pre-wash operation for oil blanks, and the automation-conveyors. As mentioned above, the forklift trucks come into play for the first time only in handling blanks in tote boxes in the blank storage room.

The second part of automated blank and coin handling starts in the blank storage room, where the blanks in tote boxes are brought by forklift trucks and deposited (the bottom of the tote box opens) into hoppers about 3 ft. above floor level. From here the blanks are carried up by conveyor to surge hoppers about 15 ft. above the floor. There is one surge hopper for every one of the six coining press lines (it would be possible to stamp six different denominations at one time). Each coining press line has an overhead monorail line with one charge car riding on it. There is a hopper above each coining press equipped with load cells. When a pre-set low level of blanks in the coin press hopper is reached, a signal is sent to the charge car. The surge hopper dumps a load (about 100 lbs.) into the charge car, and it delivers and dumps the blanks into the coining press hopper that called for blanks. Coining presses are HME's with rotary/dial feed system, running at 300 SPM and up. There is a coin tube, similar to ours, which is monitored for the presence of blanks. If the coin tube is not full of blanks a warning light comes on, but the press keeps running. Another check for blanks is made in the rotary feed mechanism. If a blank is missing here, the press stops. The finished coins accumulate in a container, and the operator, upon inspection, releases them into a conveyor in a trench below the floor level. This conveyor and the conveyors from other coining lines carry the coins to surge hoppers above the counting machines (Abbott). Coins are counted, bagged, tied and sealed, and placed on a pallet. Here the forklift trucks are employed the second time to take the pallets to a vault, which is located next to the shipping dock. Forklift trucks are used to transfer bagged coins on pallets from the vault to the shipping dock, all indoors. Coins are shipped in bags, pallets never leave the mint. The mint operates with a total of four forklift trucks.

The conveyor system was designed by ASEECO of Los Angeles, CA.

The conveyors are all enclosed, with sectionalized, easily removable covers. There were some problems initially; most of them have been corrected. As blanks at some point were loaded into conveyor, they had a tendency to bounce around, getting into the drive chains and sprockets. Chutes were modified to slow down the blanks, and the chutes were also made narrower and longer along the axis of conveyor travel. Strategically located brushes were installed in the conveyor system, wiping off/removing any blanks that were traveling on the bucket rim. There were some problems of reversing the direction of conveyor travel, because the individual buckets overlap each other and the system works better in one direction than the other. The most troublesome section of the conveyor system are the conveyors below the floor level, running along the front of coining presses. The trenches are covered with steel plates. The plates were quite light and started to warp and rock, making it quite uncomfortable for the operators to stand. The plates were made heavier by reinforcing them on the underside with metal stiffeners to the point that they became too heavy to handle. Sometimes, when problems occur, a series of plates have to be removed to find the cause. Occasionally the whole length of the trench has to be opened, leaving no room for the operators to stand, and requiring the entire coining line to be shut down. Steel, in general, is a bad surface for the operator to stand on for eight hours.

Flexibility of the conveyor system was achieved by basically three features:

- a. Various sections of conveyor system are reversible, making it possible to change/select the routing of material for normal operation, as well as in case of trouble;
- b. There are strategic points at which the blanks can be off-loaded into tote boxes or other containers instead of allowing the material to follow the normal route, if there is trouble down the line;
- c. Mobile racks/hoppers are employed to "feed" the conveyor line at various points, when necessary.

The highest noise level in the plant is in the blanking area, where it reaches about 100 dBA. Some studies were performed to reduce the noise level around punch presses by enclosing them, but nothing has been done as yet, and there are no plans to do anything in the immediate future. High cost factor was mentioned as one of the reasons for not implementing any action towards noise control. With only few exceptions the plant as a whole must be a plant engineer's dream. Lighting level is approx. 100 f-c throughout. Fluorescent lighting is used in offices, and metal halide lights are used in all production areas. Some local incandescent lights are used for better color rendition where inspection is performed. The whole building, except the blanking/material receiving section, is air conditioned. Plans are underway to extend the A/C to the blanking section as well. All utilities and mechanical rooms are on

the second floor level connected with catwalks. The mechanical equipment capacity is twice the size required, with only one half of the equipment operating at any given time. Boilers are fired with natural gas without any provisions for an alternate fuel. This is one weak point in the system. Compressed air is cooled to remove the moisture with cold water coils. All water in this set-up is dumped into sewer lines resulting in quite a waste of this natural resource.

The organizational structure is very simple and perhaps unattainable within our (U.S.A.) society: the installation is in charge of a general manager, with three superintendents (administration, production, technical services) reporting to him. There are no assistants. There is one general foreman under the Superintendent of Production supervising the entire production without any other foreman. Every operator in production is trained to do all operations, from blanking through bagging. Everybody is rotated from one operation to another weekly. There are no management representatives or supervisors of any kind on the second shift. The Union plays a very important, positive role. In fact, the second shift continuously outproduces the first shift.

One person in charge of security is directly employed by the mint; all guards are subcontracted from the local security company.

I was met, escorted and continuously extended the courtesy by Mr. Robert J. Hall, Superintendent of Production. He went out of his way to make sure my visit was pleasant and informative.

Philadelphia

A. Noise Reduction

I spent most of the first day with Mr. Bill Smith learning about the work that has been done toward noise control. Inspected the installed "curtains" on the first three coining presses. It seems that the treatment of the feeder bowl assembly is quite simple and economical.

Was briefed about the plans to use incremuted material to replace three existing steel parts for each feed finger assembly, and also the treatment of carriage enclosure.

Inspected the progress made in enclosing a riddler, and obtained all necessary data, should the final tests prove this to be a good solution, and the Denver Mint would need to treat their riddlers in similar manner.

B. Automated lines

Familiarized myself with the two automated production lines. Found them not as flexible as the Winnipeg lines. Philadelphia's conveyors are not enclosed, possibly contributing to the noise problem. Individual buckets in Phila. are larger and of slightly different design. The bucket edges that overlap in the position of horizontal travel in

the Philadelphia Mint seem to be designed better, because there is no flat surface for the blanks/coins to lay on. If any conveyors of this type are recommended for use in the Denver Mint, the buckets should probably be similar to the size used at Winnepeg, but the rim design should be similar to that at Philadelphia; also, the buckets should probably be made by injection molding from material such as E-A-R-C-1002, which has the required physical strength and the desired accoustical properties. However, other properties, such as the temperature that this material can withstand (near annealing furnaces, for example) will have to be investigated.

Generally, I could not extract any appreciable amount of negative comments on Philadelphia's automated lines from anybody.

I talked to everybody involved with carbide dies in one way or another (Messrs. Leone, Kane, Smith, Breen, McKeown, engineers, blanking foreman and operators, and a few more), and received the same basic answer, - carbide dies are better than steel dies. While various studies have been made, such as Cent Blank Diameter (ref. Smith to Goldman memo, 2/13/1975 and another one dated 3/10/75), there does not exist a true factual comparison of the total actual costs of using carbide dies vs steel dies. The same holds true for the Denver Mint, since only very poor or no records exist on the cost of steel die operation. However, considering the fact that the Philadelphia Mint, Winnepeg Mint, Coors Co. in Golden, Co, and the industry in general are all sold on the benefits of carbide dies, the only conclusion one can reach is that there must be something in the way the Denver Mint is handling the carbide dies that contributes to high maintenance cost. I reviewed in quite a detail with Mr. Paki the B&M involvement with the carbide dies; reviewed the material and found it to be the same (Carmet CA411); reviewed the die handling methods and tools, and found them almost identical. All of these and the fact that Denver is not getting a consistent carbide die performance leads one to a conclusion that what Denver lacks is the experience in die handling (grinding, setting-up, etc.) and perhaps a true committment. My recommendation would be for the Denver Mint to "borrow" from Philadelphia an experienced person who could watch Denver's operation, and, hopefully, point out the practices that either are not correct, or need improvement.

cc: Stella B. Hackel
Evelyn T. Davidson
Harry E. Lawrence
William H. Darlington

PROGRESS REPORT - APRIL 21, 1978
DENVER MINT IMPROVEMENT STUDY.

This is our scheduled progress report on the Denver Mint Improvement Study. A revised Plan of Action and the Planning and Scheduling Chart are also included.

After a somewhat slow start, the project is basically proceeding quite well and on schedule. As normally is the case, it took some time for the individuals involved to start thinking and acting as members of a team. Daily informal communication and the feeling of responsibility has improved the attitude toward the project tremendously.

We were not able to start the drafting effort (activity 4.2) on time as planned, because the draftsman, Mr. Tom Cawley, came on board only on 4/3/78, one week late. Additionally, he had to attend a previously scheduled 3-day EEO training course. This basic phase of drafting effort thus slipped by two weeks, and was completed on 4/21/78. Fifteen D-size (24" x 36") drawings of up-to-date floor plans were produced.

The drafting effort delay, however, did not affect the overall project time, although, as shown on the revised Planning and Scheduling Chart, the completion of some activities (4.10, 4.14, 4.15), basically having to do with existing equipment layouts and existing material and process flows, was delayed by two weeks. One very important date, 6/9/78, bringing us to the point of decision to identify those operations or processes and equipment which should be relocated outside the existing Mint building, remains as originally scheduled.

We are quite confident at this time that the start of the series of activities (7.8, 7.9, 7.10), the consideration of expansion to off-site or on-site facilities, will take place earlier than originally scheduled. Our revised chart shows this date now being 6/23/78 instead of 7/14/78, a 3-week gain. We feel it would be a little premature at this time to predict an earlier completion of the whole project.

We can comment as follows on individual activities that were due to be completed or in which we are actively involved at this time. Please refer to the up-dated chart.

Activity 4.2- - Trip by Al Vaitaitis to Winnepeg and Philadelphia Mints, - see attached Trip Report.

Activity 7.2.2 - Noise reduction for feed finger assembly. We are aware of the progress being made by Mr. Smith in Philadelphia, and are awaiting the results.

Activity 7.2.1 - Enclosure of feeder bowl assembly on coining presses. Having learned what seems to be a good solution from the Philadelphia Mint, we are proceeding with our first installation on a Bliss 6K-225 press (press TB-1). The first enclosure should be completed on or before 4/25/78 and will be evaluated prior to proceeding with the remainder of the presses.

Activity 7.1 - Punch press enclosure for noise reduction. The frame work was completed by a subcontractor on 4/3/78.

We are presently awaiting the arrival of the accoustical material, which was promised to be shipped this week. Installation of the accoustical material will be done by our B&M division and should take about 2-3 weeks to complete. The accoustical material actually would have been received much earlier, had not placing of the order been delayed one month in the procurement process. Two photographs, partially showing the framework around Punch Press No. 4, are included.

Activity 4.2 - Basic drafting effort, - progress of this activity was discussed earlier in this report.

Activity 4.1 - Production capacities. This activity is completed. The data is submitted with this report - see Tables I and II.

Activities 4.4.1 thru 4.4.8 - Optimum equipment spacing and arrangement. We realized that these activities cannot be studied by themselves, since the optimum equipment spacing and arrangement will depend to a certain degree on the noise problem solutions, and especially on automation. Some work is going on presently, but the scheduled completion date had to be changed.

Activity 4.22 - Impact of pellatized coin shipping. Although not previously shown as such, this activity was done. It was added to our action plan for record purposes.

Activity 4.3.1 - Measurements of air flow in the existing ventilation system. Our original schedule called for preparation of the existing ventilation drawings (activity 4.3) first, followed by air flow measurements (activity 4.3.1). Due to earlier discussed drafting delay, the two activities were reversed. We also gained a better feel for the required time, and revised the schedule accordingly.

Activity 7.6 Availability of off-site government facilities. Contacts have been made with Lowry Air Force Base, Buckley Naval Base, Fitzsimons Army Medical Center, the Real Estate Office of the Corps of Engineers, and the Rocky Mountain Arsenal regarding the availability of facilities suitable for production and/or warehouse activities. The Rocky Mountain Arsenal apparently has the only potential space available. It has been difficult to get firm data and any type of commitment on the facilities available at the Arsenal but efforts are continuing in this regard.

Activity 4.7 Visitors tour routes. Proposed revisions and improvement of the tour route have been finalized with the concurrence of the Director, Ms. Hackel. Detailed cost estimates are being prepared for these changes.

Activity 4.6 Office layout review. Office layouts have been reviewed and several office relocations have been adopted by

management. Detailed cost estimates are being prepared on construction required for these changes.

Activity 4.6.1 Some organizational changes have been discussed and finalized as a consideration in Activity 4.6.

Activity 4.11 List of OSHA non-compliance. The list is partially complete. We are taking steps to obtain an up-to-date estimate on the cost of up-dating the Standard presses to OSHA requirements. As this will take 4 to 5 weeks, the completion date of this activity was rescheduled.

Activity 4.12 Compressed air, steam and water piping deficiencies. We find that quite a bit of problems exist in the original part of the Denver Mint as far as piping is concerned. The activity is about 80% complete.

Activity 4.20 Security and fire protection systems. Very little was done on this area due to shortage of personnel. Since the completion of this item does not directly affect any following activities in the immediate future, a new completion date was established.

Activities 4.9, 4.9.1 The new Action Oriented Energy Management Plan has added far more complexity to this activity than originally planned. The proposed Energy Management Plan requires a more detailed analysis and approaches the problem from a different perspective than perceived in planning an energy study. The demand on our time and effort to effectively meet the task assignments of the Energy Management Plan may have a delaying effect on some activities of the Denver Mint Improvement Study since the expertise of many of the same people is involved. It appears to be a practical impossibility from a front-end perspective to do justice to the requirements the energy survey within the imposed time limits, however, our initial approach is to make the energy survey our prime priority and see what is accomplished by the deadline date of May 19, 1978.

Dinner Most Improvement Study

